

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE (DD-MM-YYYY) Date Not Given	2. REPORT TYPE Administrative Report; Open File Report	3. DATES COVERED (From - To) 1947-1955		
4. TITLE AND SUBTITLE Stream Flow Records Helmand River Valley, Afghanistan, 1947-1954 (With Some Records for 1955). Appendix 17. Surface water investigations in Afghanistan: a summary of activities from 1952 to 1969. United States Operations Mission to Afghanistan; International Cooperation Administration, Lashkar Gah, Afghanistan.		5a. CONTRACT NUMBER 5b. GRANT NUMBER 5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Snell, Leonard J.		5d. PROJECT NUMBER 5e. TASK NUMBER 5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Geological Survey (USGS) 12201 Sunrise Valley Drive Reston, VA 20192, USA		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S) HVA; ICA; USGS; USAID		
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Unclassified/Unlimited				
13. SUPPLEMENTARY NOTES Appendix 17.				
14. ABSTRACT The purpose of this report is to summarize briefly the history of the Surface Water Research project since its inception in 1952, the work accomplished, and the problems encountered. In general, each topic is discussed under two periods of time: 1952-1963, when projects were confined to the Helmand River Valley and was entitled "Helmand Surface Water Investigations (306-12-021, 306-M-12-AD and 306-AC-12-AD5)," and 1963-1969 when activities were expanded to cover most of Afghanistan and title was changed to "Surface Water Research (306-11-190-002)".				
Prepared by the United States Geological Survey in cooperation with the Water and Soil Survey Department, Ministry of Agriculture and Irrigation, Royal Government of Afghanistan under the auspices of the United States Agency for International Development.				
15. SUBJECT TERMS Afghanistan. Drainage. Flood control. Helmand River Project. HVA. Helmand Valley Authority. Hydrology. Hydropower. Irrigation. Lashkar Gah. Rainfall Runoff Calculations. Sediment. Stream-flow Data. Stream gaging stations. Stream measurements. Surface Water. Water supply.				
16. SECURITY CLASSIFICATION OF: a. REPORT UU		17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES Various	19a. NAME OF RESPONSIBLE PERSON 19b. TELEPHONE NUMBER (Include area code)

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appendix 17

Appendix 17

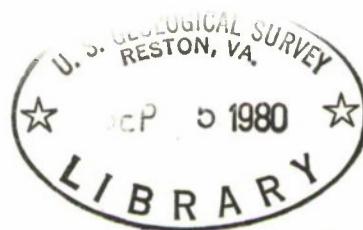
STREAM FLOW RECORDS

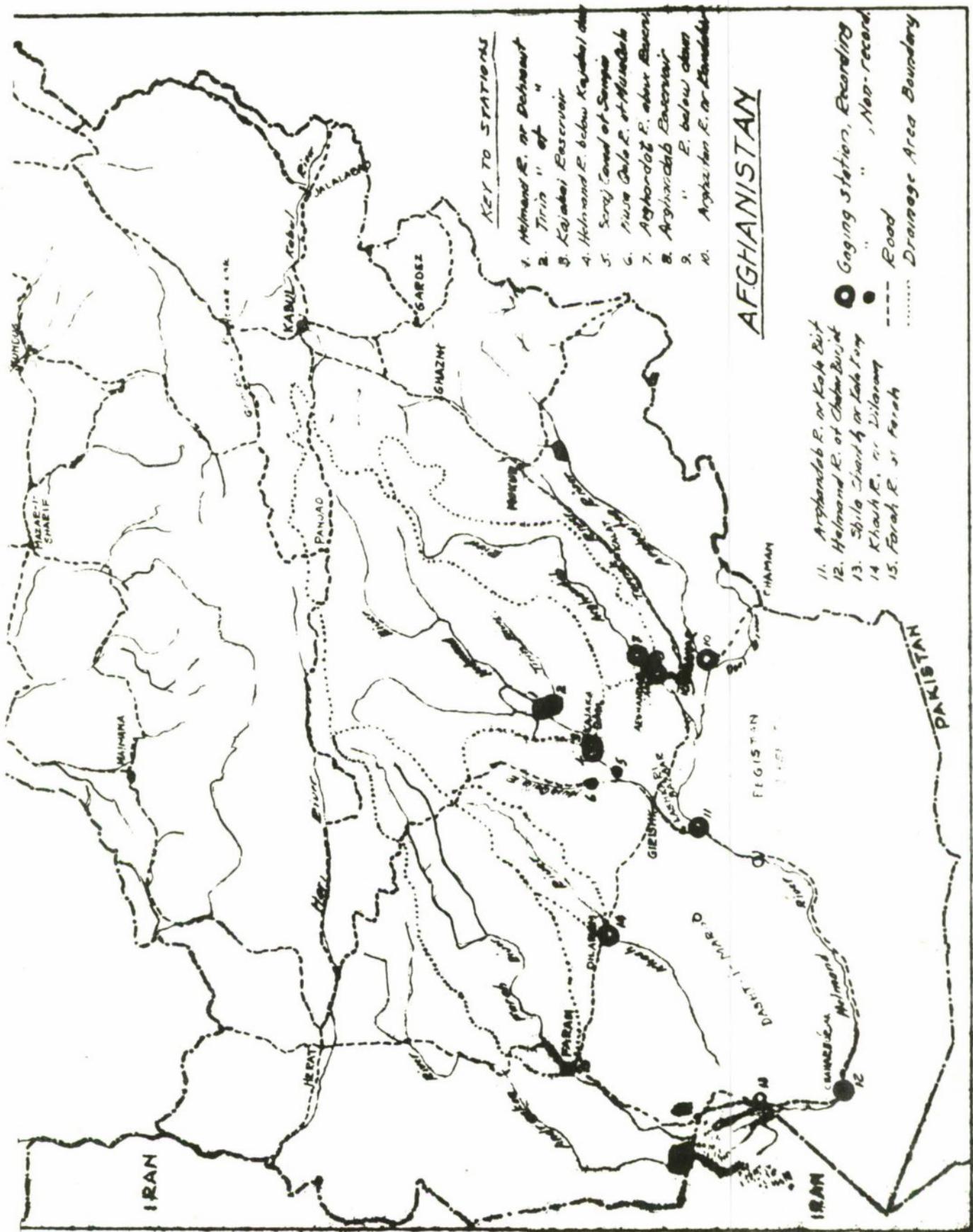
HELMAND RIVER VALLEY, AFGHANISTAN

1947-54

(with some records for 1955)

by L. J. Snell





HELMAND RIVER BASIN

1

Helmand River above Kajakai Reservoir, near Dehraout, Afghanistan

Location.--Lat. $32^{\circ}41'$ N., long. $65^{\circ}30'$ E., on right bank, 10 kilometers upstream from village of Dehraout, 15 kilometers upstream from Tiring River, 70 kilometers upstream from Kajakai dam, and 120 kilometers north of Kandahar.

Drainage area.--13,700 square miles (from M-KA from Survey of India maps).

Records available.--April 1951 to September 1952 (partial gage heights only), October 1952 to September 1954.

Gage.--Water-stage recorder. Altitude of gage is 1,100 meters (from Survey of India maps). Prior to Nov. 18, 1952 staff gage at site 2 kilometers upstream at different datum.

Extremes.--1952-53: Maximum discharge during year, 24,500 cfs (gage height, 2.29 meters) Mar. 7; minimum, 1,620 cfs July 22.

1953-54: Maximum discharge during year, 30,400 cfs (gage height, 2.70 meters) Mar. 30; minimum, 2,240 cfs Sept. 14.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Many small diversions for irrigation above the station.

HELMAND RIVER BASIN

1

Helmand River above Kajakai Reservoir, near Dehraout, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,200	2,650	2,700	2,670	2,240	6,230	10,800	15,400	8,990	2,670	1,860	1,790
2	2,200	2,650	2,700	2,600	2,440	6,750	10,600	15,100	9,720	2,670	1,860	1,790
3	2,200	2,650	2,670	2,440	2,600	7,160	10,500	15,000	13,000	2,670	1,880	1,790
4	2,200	2,650	2,670	2,270	2,740	7,270	10,600	14,800	12,600	2,640	1,880	1,840
5	2,250	2,650	2,670	2,240	2,840	7,710	11,000	14,400	10,900	2,510	1,880	1,820
6	2,250	2,650	2,670	2,210	2,740	11,400	12,400	13,900	9,480	2,500	1,840	1,790
7	2,250	2,650	2,700	2,210	2,740	21,900	14,000	13,700	8,500	2,500	1,840	1,790
8	2,300	2,650	2,700	2,240	2,870	19,400	14,200	13,700	7,940	2,530	1,840	1,820
9	2,300	2,650	2,640	2,300	3,220	14,400	15,000	13,400	7,270	2,500	1,860	1,820
10	2,300	2,650	2,560	2,470	4,630	12,300	16,600	13,000	6,850	2,470	1,860	1,830
11	2,350	2,650	2,560	2,530	3,580	11,400	16,600	13,000	6,640	2,470	1,860	1,840
12	2,400	2,650	2,560	2,560	4,800	10,500	18,300	12,400	6,640	2,330	1,930	1,840
13	2,400	2,650	2,550	2,640	4,270	9,720	21,500	12,100	6,540	2,270	1,900	1,850
14	2,450	2,650	2,600	2,700	5,110	9,230	19,600	11,700	6,430	1,970	1,860	1,860
15	2,450	2,650	2,600	2,670	4,670	9,600	18,000	11,400	6,430	1,840	1,860	1,870
16	2,450	2,650	2,640	2,600	4,270	9,600	17,100	11,200	6,330	1,750	1,880	1,880
17	2,450	2,650	2,600	2,470	3,990	8,870	16,800	11,000	5,850	1,750	1,930	1,880
18	2,500	2,810	2,700	2,330	3,720	8,390	16,800	10,800	5,750	1,710	1,900	1,890
19	2,500	2,840	2,740	2,270	3,540	8,270	16,600	10,200	5,660	1,790	1,880	1,900
20	2,550	2,870	2,700	2,360	3,510	8,270	15,400	9,600	5,470	1,860	1,840	1,900
21	2,600	2,740	2,600	2,330	3,510	8,500	14,800	9,230	5,660	1,770	1,820	1,930
22	2,600	2,740	2,440	2,270	3,720	9,110	14,700	8,870	4,340	1,680	1,790	1,930
23	2,600	2,700	2,330	2,330	3,920	12,400	14,700	8,500	3,510	1,840	1,840	1,900
24	2,600	2,700	2,360	2,400	3,950	20,000	15,000	8,050	3,290	1,950	1,900	1,900
25	2,600	2,700	2,470	2,440	3,920	19,000	15,100	7,820	3,180	1,880	1,880	1,930
26	2,600	2,700	2,400	2,530	4,070	16,800	15,600	9,230	3,150	1,880	1,880	1,930
27	2,600	2,670	2,470	2,740	4,850	15,100	15,800	12,200	2,870	1,900	1,880	1,930
28	2,650	2,670	2,470	2,560	5,370	13,600	15,900	13,000	2,700	1,880	1,860	1,930
29	2,650	2,670	2,400	2,400	-	12,400	15,900	11,400	2,670	1,900	1,790	1,970
30	2,650	2,670	2,440	2,300	-	12,300	15,900	10,400	2,640	1,930	1,790	1,970
31	2,650	-	2,600	2,180	-	11,000	-	9,720	-	1,900	1,790	-
Total	75,750	80,530	79,920	75,260	103,830	358,580	455,800	364,220	191,000	65,910	57,660	56,110
Mean	2,444	2,684	2,578	2,428	3,708	11,570	15,190	11,750	6,367	2,126	1,860	1,870
Ac-ft	150,200	159,700	158,500	149,300	205,900	711,200	904,100	722,400	378,800	130,700	114,400	111,300

Calendar year Max - Min - Mean - Ac-ft -
 Water year 1952-53: Max 21,900 Min 1,680 Mean 5,382 Ac-ft 3,896,000

Peak discharge (base, 21,000 cfs).--Mar. 7 (6 p.m.) 24,500 cfs (2.29 m); Mar. 24 (3 p.m.) 21,100 cfs (2.12 m); Apr. 13 (11:30 a.m.) 21,900 cfs (2.16 m). All peaks from snow-melt.

Note.--No gage height record Oct. 1 to Nov. 17, Sept. 10-18; discharge interpolated.

HELMAND RIVER BASIN

1

Helmand River above Kajakai Reservoir, near Dehraout, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2,020	2,300	2,330	2,300	2,840	4,850	22,300	26,200	11,500	5,500	2,870	2,330
2	2,000	2,300	2,330	2,240	2,810	4,850	20,100	26,400	11,000	5,400	2,780	2,300
3	2,020	2,330	2,300	2,080	2,700	4,940	18,700	26,000	10,500	5,300	2,670	2,300
4	2,020	2,330	2,270	4,040	2,700	4,800	18,000	25,500	10,000	5,250	2,640	2,300
5	2,050	2,400	2,270	5,200	2,640	4,630	18,300	24,700	9,600	5,200	2,700	2,300
6	2,110	2,360	2,240	4,800	2,560	4,460	18,800	24,600	9,200	5,100	2,670	2,300
7	2,110	2,330	2,240	4,110	2,530	4,380	19,600	24,000	8,800	5,000	2,640	2,300
8	2,110	2,330	2,300	3,510	2,600	4,460	20,300	22,100	8,500	4,900	2,560	2,300
9	2,140	2,400	2,300	3,040	2,870	4,900	21,000	21,500	8,240	4,900	2,500	2,300
10	2,140	2,360	2,300	2,470	6,800	5,700	20,600	21,500	8,000	4,800	2,500	2,270
11	2,140	2,400	2,300	2,210	5,160	5,850	20,000	20,700	7,800	4,700	2,500	2,240
12	2,140	2,330	2,300	2,210	5,020	6,180	19,300	19,300	7,600	4,600	2,500	2,240
13	2,180	2,300	2,330	2,330	5,560	6,230	19,000	18,100	7,400	4,600	2,470	2,240
14	2,180	2,300	2,360	2,470	5,950	6,090	19,100	17,200	7,200	4,500	2,360	2,240
15	2,180	2,330	2,400	2,530	5,750	6,380	20,300	16,700	7,000	4,500	2,300	2,240
16	2,210	2,330	2,400	2,500	4,940	7,270	21,500	16,500	6,900	4,400	2,270	2,240
17	2,210	2,330	2,330	2,500	5,560	8,870	22,600	16,100	6,700	4,300	2,270	2,240
18	2,240	2,330	2,300	2,640	5,110	10,600	22,300	16,100	6,600	4,200	2,240	2,330
19	2,240	2,330	2,270	2,640	5,160	12,500	21,600	15,600	6,400	4,100	2,180	2,330
20	2,270	2,330	2,270	2,530	5,160	14,600	22,300	15,000	6,300	3,900	2,210	2,330
21	2,270	2,330	2,300	2,210	5,060	16,900	23,300	14,500	6,100	3,700	2,240	2,330
22	2,270	2,330	2,270	1,970	5,020	18,800	23,600	14,000	6,000	3,510	2,240	2,400
23	2,270	2,330	2,560	1,950	5,110	18,500	25,600	13,400	5,900	3,400	2,300	2,400
24	2,270	2,360	2,600	2,050	5,110	19,100	24,800	13,200	5,800	3,360	2,300	2,440
25	2,270	2,400	2,600	2,270	4,900	18,800	23,400	12,900	5,700	3,220	2,330	2,440
26	2,270	2,440	2,470	2,440	4,760	18,600	23,200	12,700	5,600	3,120	2,400	2,440
27	2,270	2,360	2,440	2,470	4,760	20,000	23,400	12,700	5,500	3,010	2,400	2,470
28	2,270	2,330	2,300	2,530	4,800	23,400	23,600	12,700	5,500	2,980	2,380	2,470
29	2,270	2,330	2,110	2,780	-	23,700	24,800	12,600	5,600	2,980	2,330	2,500
30	2,270	2,360	2,210	2,810	-	28,900	25,600	12,600	5,600	2,940	2,330	2,530
31	2,300	-	2,360	2,870	-	26,200	-	12,100	-	2,820	2,330	-
Total	67,710	70,320	72,360	84,700	123,940	365,440	617,000	557,000	222,540	130,190	75,360	70,090
Mean	2,184	2,344	2,334	2,732	4,426	11,790	21,570	17,970	7,418	4,200	2,431	2,336
Ac-ft	134,300	139,500	143,500	168,000	215,800	724,800	1,283,000	1,105,000	444,400	258,200	149,500	139,000

Calendar year 1953: Max 21,990 Min 1,680 Mean 5,312 Ac-ft 3,845,000
 Water year 1953-54: Max 28,900 Min 1,950 Mean 6,813 Ac-ft 4,932,000

Peak discharge (base, 21,000 cfs).--Mar. 30 (5:30 a.m.) 30,400 cfs (2.70 m); Apr. 23 (4 p.m.) 26,200 cfs (2.51 m); May 2 (7 a.m.) 27,000 cfs (2.55 m).

Note.--No gage-height record June 10 to July 21; discharge interpolated.

HELMAND RIVER BASIN

2

Tirin River at Dehraout, Afghanistan

Location.--Lat. $32^{\circ}40' N.$, long. $65^{\circ}30' E.$, on left bank at village of Dehraout, 6 kilometers upstream from mouth, about 65 kilometers upstream from Kajakai dam, and 235 kilometers north of Kandahar, by road.

Drainage area.--2,160 square miles, approximately.

Records available.--March 1952 to September 1954. April to June 1951 (gage heights only).

Gage.--Water-stage recorder. Altitude of gage is about 1,100 meters (from Survey of India maps).

Extremes.--1952: Maximum discharge during period March to September, 3,610 cfs Mar. 27 (gage height, 2.00 meters), from rating curve extended above 1,100 cfs by logarithmic plotting; minimum not determined.

1952-53: Maximum discharge during year, 2,480 cfs May 26 (gage height, 1.64 meters); from rating curve extended above 1,100 cfs by logarithmic plotting; minimum daily, 71 cfs Aug. 10, 18; minimum gage height, 0.17 meter on many days.

1953-54: Maximum discharge not determined; minimum daily discharge, 95 cfs Oct. 1.

Remarks.--Records good except those for periods of no gage-height record, which are fair, and those for 1952 and March-May 1954, which are poor. Many small diversions for irrigation above the station.

HELMAND RIVER BASIN

2

Tirin River at Dehraout, Afghanistan

Discharge, in cubic feet per second, period March to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	1,580	702	282		
2							-	1,510	673	263		
3							-	1,530	2,950	244		
4							-	1,910	1,370	234		
5							-	1,710	1,170	225		
6							-	1,560	1,000	225		
7							-	1,580	933	225		
8							-	1,580	863	225		
9							-	1,620	863	225		
10							-	1,620	799	225		
11							-	1,600	702	217		
12							-	1,560	673	217		
13							-	1,510	586	217		
14							-	1,470	572	209		
15							-	1,410	557	209		
16							-	1,410	532	201		
17							-	1,410	506	201		
18							-	1,430	468	209		
19							-	1,450	430	234		
20							-	1,350	408	225		
21							-	1,230	408	225		
22							1,090	1,110	386	225		
23							968	968	364	225		
24							863	898	364	225		
25							880	933	353	225		
26							1,110	916	342	225		
27							3,330	898	342	225		
28							3,240	880	342	225		
29							2,800	863	331	225		
30							1,730	799	331	225		
31							1,580	-	320	-		
Total							40,295	20,640	6,762			
Mean							1,343	666	225			
Ac-ft							79,920	40,940	13,410	12,000	10,000	8,500

Calendar year : Max	Min	Mean	Ac-ft
Water year : Max	Min	Mean	Ac-ft

Note.--No gage-height record Oct. 1 to Dec. 12, Dec. 14 to Mar. 21, July 1 to Sept. 30; discharge for July-September estimated on basis of recession curve during the period of no precipitation.

HELMAND RIVER BASIN

2

Tirin River at Dehraout, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	230	277	331	336	799	916	455	234	88	74	116
2	130	234	282	326	342	863	863	430	560	88	74	88
3	130	209	287	315	430	898	831	430	380	88	81	84
4	130	205	287	310	586	907	880	408	301	95	95	84
5	135	193	292	301	468	959	959	408	244	102	81	88
6	135	193	292	301	424	1,190	1,000	375	217	102	74	88
7	140	209	301	301	443	1,680	1,020	320	209	92	74	95
8	140	209	292	310	443	1,700	1,000	244	160	88	74	95
9	145	209	296	301	506	1,500	986	230	176	95	74	98
10	150	209	296	306	1,400	1,400	986	230	168	95	71	95
11	150	209	301	310	766	1,250	1,000	221	152	88	74	92
12	155	201	306	306	891	1,150	1,090	225	116	88	81	88
13	160	209	301	443	1,340	1,100	1,110	217	109	88	81	84
14	160	244	301	519	1,240	1,040	1,040	209	116	88	88	81
15	165	244	301	408	869	986	968	180	123	88	84	81
16	170	244	310	364	630	898	907	176	144	81	74	81
17	175	244	331	353	572	750	847	172	144	81	74	78
18	180	244	320	375	544	750	847	168	120	81	71	74
19	180	244	320	380	532	718	815	168	109	74	74	81
20	180	249	320	364	519	718	782	160	130	74	81	81
21	184	254	310	353	494	750	658	156	106	74	88	84
22	184	258	310	358	481	750	615	164	102	88	95	88
23	184	254	310	353	481	1,110	586	172	116	74	106	92
24	184	249	320	358	468	1,820	544	176	109	81	102	95
25	176	254	320	364	481	1,750	519	193	116	88	102	95
26	184	254	310	358	481	1,640	494	424	102	88	106	95
27	188	272	310	331	557	1,490	455	874	81	74	95	95
28	197	277	315	353	630	1,310	455	519	95	81	92	92
29	209	282	331	342	-	1,170	455	353	98	81	88	95
30	215	277	331	331	-	1,040	455	301	95	81	88	95
31	225	-	326	331	-	968	-	263	-	81	102	-
Total	5,170	7,063	9,506	10,756	17,354	35,054	24,083	9,021	4,932	2,655	2,618	2,678
Mean	167	235	307	347	620	1,131	803	291	164	85.6	84.5	89.3
Ac-ft	10,250	14,010	18,850	21,330	34,420	69,530	47,770	17,890	9,780	5,270	5,190	5,310

Calendar year : Max - Min - Mean - Ac-ft -
 Water year 1952-53: Max 1,820 Min 71 Mean 359 Ac-ft 259,600

Note.--No gage-height record Oct. 1-21, 30, 31, Mar. 8-13; discharge interpolated or computed on basis of records for Helmand River near Dehraout.

HELMAND RIVER BASIN

Tirin River at Dehraout, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to October 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	168	258	455	644	1,500	3,500	2,300	630	340	230	180
2	98	160	263	449	644	1,300	3,100	2,200	650	330	230	170
3	102	164	263	455	644	1,200	2,900	2,100	630	330	230	170
4	109	164	263	1,150	644	1,100	2,700	2,100	610	320	220	170
5	123	172	263	3,180	644	1,100	2,600	2,000	590	320	220	170
6	137	180	268	1,160	644	1,100	2,600	2,000	570	310	220	160
7	130	180	268	766	637	1,100	2,500	1,900	550	310	220	160
8	120	201	263	644	637	1,100	2,500	1,900	532	310	220	160
9	127	197	272	622	644	1,100	2,500	1,800	510	300	220	160
10	137	197	277	519	2,290	1,200	2,400	1,800	500	300	210	160
11	130	193	287	600	2,460	1,200	2,400	1,700	480	300	210	160
12	130	193	292	750	1,800	1,300	2,400	1,700	470	290	210	160
13	140	201	306	750	2,370	1,300	2,400	1,600	460	290	210	160
14	152	213	310	750	1,940	1,300	2,400	1,600	450	290	210	160
15	168	217	315	750	1,840	1,400	2,400	1,500	440	280	210	160
16	176	217	306	700	1,860	1,400	2,500	1,400	430	280	210	160
17	184	217	306	700	1,910	1,500	2,500	1,300	420	280	204	160
18	184	217	301	673	1,940	1,600	2,600	1,300	410	270	200	160
19	172	221	306	666	1,660	1,800	2,600	1,200	410	270	200	160
20	168	225	310	651	1,560	2,000	2,700	1,200	400	270	200	160
21	160	221	306	644	1,390	2,200	2,900	1,100	390	270	200	160
22	156	225	320	644	1,410	2,300	3,100	1,100	390	261	200	160
23	152	230	802	644	1,330	2,300	3,300	1,000	380	260	190	160
24	152	239	644	637	1,350	2,200	3,200	950	370	250	190	160
25	152	244	512	630	1,350	2,200	3,000	900	370	250	190	160
26	144	239	488	630	1,200	2,100	2,800	900	360	250	190	160
27	144	244	481	630	950	2,100	2,700	850	360	240	180	160
28	152	249	468	630	1,000	2,300	2,600	800	350	240	180	162
29	160	254	462	658	-	3,000	2,500	800	350	240	180	160
30	160	254	462	658	-	5,000	2,400	750	340	240	180	160
31	168	-	462	651	-	4,900	-	700	-	230	180	-
Total	4,482	6,296	11,104	23,446	37,392	56,300	80,600	44,450	13,852	8,721	6,344	4,862
Mean	145	210	358	756	1,335	1,816	2,687	1,434	468	281	205	162
Ac-ft	8,890	12,490	22,020	46,500	74,170	111,700	159,900	88,170	27,480	17,300	12,580	9,640
Calendar year 1953:				Max	1,820	Min	71	Mean	359	Ac-ft	259,890	
Water year 1953-54:				Max	5,000	Min	95	Mean	816	Ac-ft	590,800	

Note.--No gage-height record Jan. 11-17, Feb. 2, 3, 26, Feb. 28 to Sept. 30; discharge for Jan. 11-17, Feb. 2, 3, 26, interpolated; discharge for Feb. 28 to Sept. 30 estimated on the basis of 4 discharge measurements and records for stations on Helmand River near Dehraout and Arghandab River above Arghandab reservoir.

HELMAND RIVER BASIN

3

Kajakai Reservoir at Kajakai, Afghanistan

Location.--Lat. $32^{\circ}19'$ N., long. $65^{\circ}07'$ E., on gate control tower near left end of Kajakai dam on the Helmand River, 3 kilometers northeast of village of Kajakai, 40 kilometers upstream from Musa Qala River, 75 kilometers northeast of Girishk, and about 125 kilometers upstream from Arghandab River.

Drainage area.--15,400 square miles (from MKA data based on Survey of India maps).

Records available.--January 1953 to September 1954.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (from MKA surveys). Prior to Mar. 23, 1953 records are from levels to water surface.

Extremes.--Maximum contents during year, 1953-54, 1,639,000 acre-ft May 3 (elevation, 1,035.83 meters); minimum, 347,300 acre-ft Dec. 21 (1,004.24 meters), from graph based on gage readings.
1953-54: Maximum contents, that of May 3, 1954.

Remarks.--Reservoir is formed by earth-fill dam; storage began Jan. 28, 1953; dam completed November 1953. Present capacity, 1,495,000 acre-ft between 965.0 meters (center-line of irrigation outlet) and 1,033.5 meters (crest of ungated spillway) above mean sea level. Elevation of top of dam is 1,050.0 meters; capacity with future gated spillway, 2,300,000 acre-ft. No dead storage (future power plant installation will govern). Records herein represent total contents. Water is stored to supplement low water flow of the Helmand River for irrigation of about 600,000 acres in the Helmand River valley and for a future installed power capacity of about 120,000 KW. Reservoir release is through three hollow-jet valves backed up by three 84-inch roto-valves and vertical lift gates. Maximum valve release is 8,400 cfs; maximum spillway design capacity is 350,000 cfs.

3

HELMAND RIVER BASIN
Kajakai Reservoir at Kajakai, Afghanistan

Contents at 12 p.m., in thousand of acre-feet, period February to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					7.2	125.4	592.8	1,114.4	1,348.3	1,266.0	980.2	667.8
2					7.8	130.0	601.4	1,129.6	1,351.1	1,261.6	971.4	658.6
3					8.9	136.0	609.7	1,145.2	1,362.0	1,262.6	960.4	648.7
4					10.2	142.3	617.6	1,159.5	1,371.1	1,263.2	949.9	639.7
5					11.5	149.9	627.5	1,173.8	1,377.4	1,256.6	939.1	630.5
6					-	-	640.0	1,187.1	1,380.2	1,247.2	928.8	621.2
7					14.3	174.1	655.9	1,198.7	1,381.4	1,237.9	918.5	612.0
8					15.3	213.3	672.2	1,210.9	1,381.4	1,228.9	908.2	603.3
9					16.2	237.8	689.2	1,222.5	1,379.7	1,219.4	897.2	594.0
10					19.0	258.4	708.5	1,232.6	1,377.9	1,209.8	886.7	585.1
11					25.0	274.1	730.3	1,243.4	1,375.6	1,200.3	875.8	576.2
12					32.0	287.6	753.4	1,252.8	1,372.8	1,189.7	864.8	567.8
13					-	-	784.2	1,261.6	1,370.0	1,179.9	854.4	559.2
14					57.9	307.9	-	1,269.2	1,367.1	1,169.7	844.4	553.3
15					72.4	316.6	-	1,276.4	1,364.2	1,160.0	834.0	549.2
16					81.7	325.8	-	1,282.4	1,360.8	1,149.3	823.6	544.7
17					88.9	335.3	-	1,288.0	1,357.4	1,139.6	813.7	540.5
18					95.3	341.6	-	1,293.4	1,353.6	1,128.6	804.2	536.3
19					100.7	347.9	922.3	1,297.4	1,348.3	1,118.3	794.0	532.1
20					-	-	944.3	1,300.7	1,343.3	1,108.0	783.8	527.9
21					108.0	-	956.0	1,303.0	1,338.2	1,097.3	773.8	523.7
22					110.4	374.1	966.6	1,304.4	1,333.2	1,086.5	763.8	519.5
23					112.7	395.2	980.7	1,305.2	1,327.0	1,076.1	754.2	515.4
24					115.2	430.5	996.7	1,305.8	1,320.9	1,065.8	744.3	511.0
25					121.9	471.1	1,012.3	1,305.8	1,314.2	1,055.4	734.6	507.3
26					120.7	506.1	1,029.3	1,307.4	1,306.9	1,045.1	724.9	503.2
27					-	530.6	1,046.5	1,316.4	1,299.0	1,034.4	715.5	499.2
28					122.7	541.9	1,063.4	1,328.2	1,291.2	1,024.3	706.0	497.4
29					-	561.6	1,079.9	1,336.6	1,281.9	1,013.7	696.2	504.1
30					-	573.4	1,097.0	1,341.6	1,273.6	1,002.7	686.8	507.8
31					-	583.5	-	1,345.5	-	991.7	677.3	-

HELMAND RIVER BASIN

3

Kajakai Reservoir at Kajakai, Afghanistan

Contents at 12 p.m., in thousand of acre-feet, October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	503.8	407.2	370.4	396.1	416.2	416.8	934.0	1,636.8	1,548.6	1,466.2	1,416.3	1,227.9
2	500.0	404.5	370.4	398.8	410.8	417.3	969.2	1,638.7	1,546.7	1,472.1	1,410.5	1,220.4
3	496.0	401.9	372.7	402.5	405.7	417.3	1,002.2	1,638.7	1,544.8	1,477.6	1,404.7	1,214.1
4	492.2	399.5	375.0	412.3	401.2	417.3	1,031.6	1,638.0	1,544.8	1,479.0	1,399.0	1,207.7
5	488.5	397.1	377.3	432.5	395.9	416.5	1,061.6	1,636.1	1,539.9	1,474.6	1,393.3	1,201.4
6	485.2	394.7	377.8	439.6	d394.9	415.5	1,093.3	1,633.0	1,537.4	1,474.0	1,388.2	1,196.1
7	481.7	392.3	376.2	443.5	d394.9	414.3	1,126.2	1,631.7	1,534.9	1,474.0	1,382.5	1,190.8
8	478.5	389.9	374.6	446.7	d394.9	413.0	1,161.5	1,627.3	1,531.8	1,473.4	1,376.8	1,186.5
9	475.2	387.7	373.2	449.3	d394.7	412.8	1,198.7	1,623.5	1,528.1	1,472.8	1,367.1	1,182.4
10	472.0	388.2	371.8	451.6	d394.7	414.7	1,235.3	1,620.4	1,525.0	1,472.2	1,364.8	1,177.8
11	468.7	393.5	369.5	453.2	394.7	416.5	1,269.8	1,616.6	1,521.4	1,471.0	1,359.7	1,173.8
12	465.5	398.5	367.0	454.9	396.4	419.3	1,302.4	1,612.2	1,517.8	1,469.8	1,352.8	1,169.7
13	462.3	403.6	364.2	456.5	401.2	422.0	1,333.2	1,606.5	1,515.2	1,468.0	1,347.8	1,165.6
14	459.1	406.0	361.8	459.4	406.2	424.3	1,366.0	1,601.5	1,510.6	1,466.8	1,341.6	1,160.5
15	456.0	404.0	358.1	461.3	408.6	427.0	1,399.6	1,595.8	1,507.6	1,466.8	1,338.2	1,154.4
16	452.9	402.1	356.7	463.1	409.8	431.5	1,437.2	1,591.4	1,504.0	1,466.8	1,329.3	1,149.3
17	449.8	400.2	354.1	464.7	413.0	438.3	1,477.0	1,588.3	1,500.4	1,466.2	1,323.1	1,144.7
18	446.9	398.3	352.1	465.2	414.3	449.0	1,516.0	1,586.4	1,496.8	1,465.0	1,317.5	1,139.6
19	443.8	396.4	350.4	463.1	415.0	462.8	1,547.3	1,583.3	1,493.8	1,463.8	1,312.7	1,134.5
20	440.9	394.7	348.6	461.2	415.7	481.7	1,571.5	1,580.2	1,489.6	1,461.1	1,303.5	1,129.6
21	438.1	393.5	348.8	458.9	416.0	505.5	1,590.8	1,577.1	1,484.8	1,459.8	1,299.6	1,125.2
22	435.3	390.6	353.0	456.3	415.7	534.8	1,608.4	1,574.0	1,480.0	1,458.0	1,290.7	1,120.3
23	432.5	387.7	361.8	453.2	416.2	563.5	1,623.5	1,570.3	1,475.8	1,455.7	1,284.1	1,115.4
24	429.8	385.2	368.6	450.3	416.8	592.1	1,628.6	1,567.2	1,471.6	1,453.4	1,278.6	1,110.5
25	426.8	382.4	375.5	447.7	416.5	620.9	1,629.2	1,564.7	1,466.8	1,451.1	1,272.0	1,107.1
26	423.8	380.3	382.4	445.4	416.0	649.4	1,629.2	1,561.6	1,461.5	1,447.6	1,265.4	1,104.1
27	420.7	378.0	389.4	444.7	415.3	679.4	1,629.2	1,559.1	1,456.3	1,441.8	1,258.8	1,101.2
28	418.0	375.7	396.6	435.8	415.7	717.7	1,629.2	1,557.2	1,450.5	1,436.6	1,252.2	1,098.7
29	415.3	373.4	395.9	431.8	-	768.6	1,631.1	1,554.8	1,452.6	1,431.4	1,245.6	1,096.8
30	412.8	371.1	394.2	426.5	-	837.6	1,633.6	1,552.3	1,460.9	1,426.1	1,239.6	1,093.8
31	409.8	-	394.2	421.5	-	891.3	-	1,551.0	-	1,420.3	1,233.7	-

d Contents computed from doubtful gage-height record.

HELMAND RIVER BASIN

3

Kajakai Reservoir near Kajakai, Afghanistan

Monthly elevation and contents, January 1953 to September 1954

Date	Elevation (meters)+	Contents (acre-feet)+	Change in contents during month (acre-feet)
Jan. 31, 1953.....	971.65	6,300	+6,300
Feb. 28.....	989.97	122,700	+116,400
Mar. 31.....	1,013.14	583,500	+460,800
Apr. 30.....	1,026.24	1,097,800	+514,300
May 31.....	1,030.92	1,345,500	+247,700
June 30.....	1,029.63	1,273,600	-79,100
July 31.....	1,023.97	991,700	-281,900
Aug. 31.....	1,015.98	677,300	-314,400
Sept 30.....	1,010.65	507,800	-169,500
The period.....	-	-	+507,800
Oct. 31, 1953.....	1,006.95	409,800	-98,000
Nov. 30.....	1,005.31	371,100	-38,700
Dec. 31.....	1,006.34	394,200	+23,100
Calender year 1953...	-	-	+394,200
Jan. 31, 1954.....	1,007.12	421,500	+27,300
Feb. 28.....	1,007.19	415,700	-5,800
Mar. 31.....	1,021.65	891,300	+475,600
Apr. 30.....	1,035.74	1,633,600	+742,300
May 31.....	1,034.12	1,551,000	-82,600
June 30.....	1,032.93	1,460,900	-90,100
July 31.....	1,032.23	1,420,300	-40,600
Aug. 31.....	1,028.89	1,233,700	-186,600
Sept 30.....	1,026.16	1,093,800	-139,900
Water year 1953-54...	-	-	+586,000

+Elevation at 12 p.m. except prior to March 1953

HELMAND RIVER BASIN

4

Helmand River below Kajakai Dam, Afghanistan

Location.--Lat. $32^{\circ}19'$ N., long. $65^{\circ}06'$ E., on left bank 2 kilometers downstream from Kajakai Dam, about 100 kilometers northwest of Kandahar, and about 123 kilometers upstream from Arghandab River.

Drainage area.--16,300 square miles, approximately (from Survey of India maps).

Records available.--October 1946 to September 1947, monthly estimates only; October 1947 to September 1954.

Gage.--Water-stage recorder. Datum of gage is 690.169 meters above mean sea level (from MKA survey based on Survey of India datum).

Average discharge.--7 years (1947-54), 6,946 cfs (adjusted for storage).

Extremes.--Maximum and minimum discharges for the water years 1948-54 are contained in the following table:

Water year	Maximum			Minimum daily		
	Date	Discharge (cfs)	Gage height (meters)	Date	Discharge (cfs)	Gage height (meters)
1948	Mar. 8, 1948	31,000	2.76	Oct. 1, 1947	1,100	-
1949	(a)	50,100	3.79	(c)	1,810	-
1950	May 11, 1950	37,300	3.10	Many days	1,980	-
1951	May 7, 1951	48,400	3.70	Oct. 1-3, 1950	2,000	-
1952	Apr. 20, 1952	29,000	2.65	Aug. 16-25, 1952	1,810	-
1953	May 28-30, 1953	7,810	1.32	(d)	40	-.60
1954	May 3, 1954	32,200	2.84	Nov. 12, 13, 1953	15	-

a Apr. 26 or 27, 1949.

b From floodmark.

c Oct. 1-6, 11, 1948.

d Mar. 25, Sept. 29, 1953.

1948-54: Maximum discharge, 50,100 cfs Apr. 26 or 27, 1949 (gage height, 3.79 meters, from floodmark); minimum daily, 15 cfs Nov. 12, 13, 1953.

Remarks.--Records good except those for water years 1950, 1951, those below 300 cfs and those for periods of no gage-height record which are fair. Flow regulated by Kajakai Reservoir since Jan. 28, 1953.

HELMAND RIVER BASIN

4

Helmand River below Kajakai Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1947 to September 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,100	1,750	2,070	1,940	2,400	3,080	13,700	23,100	6,690	3,190	1,610	1,260
2	1,150	1,750	2,070	1,980	2,500	3,140	14,300	a21,500	6,490	3,080	1,570	1,260
3	1,150	1,750	2,070	2,070	2,500	3,370	16,900	a21,000	6,200	a3,000	1,540	1,260
4	1,200	1,750	2,070	2,120	2,400	4,700	18,100	a21,000	6,000	a2,900	1,500	1,300
5	1,200	1,750	2,400	2,070	2,350	5,910	16,000	a20,500	5,910	a2,800	1,500	1,330
6	1,200	1,800	2,600	2,070	2,210	6,310	14,900	a20,000	5,720	a2,700	1,460	1,330
7	1,250	1,800	2,450	2,070	2,120	17,700	14,500	a19,000	5,630	a2,600	1,430	1,330
8	1,250	1,800	2,400	2,120	2,120	24,400	16,400	a18,000	5,460	a2,500	1,460	1,330
9	1,250	1,800	2,450	2,210	2,160	14,600	20,200	a17,500	5,280	a2,500	1,460	1,360
10	1,300	1,850	2,400	2,210	2,300	11,900	20,700	a17,000	5,190	a2,400	1,460	1,360
11	1,350	1,850	2,300	2,160	2,350	10,900	20,200	a16,000	4,940	a2,300	1,460	1,360
12	1,350	1,850	2,210	2,070	2,350	9,590	18,100	a15,000	4,780	a2,300	1,460	1,360
13	1,400	1,900	2,120	1,980	2,400	8,650	17,700	a14,000	4,620	a2,200	1,430	1,360
14	1,400	1,950	2,120	1,940	2,400	8,090	17,900	a13,000	4,540	a2,200	1,400	1,400
15	1,450	1,950	2,160	1,940	2,400	7,420	18,600	a12,500	4,460	a2,100	1,330	1,460
16	1,450	2,000	2,120	1,980	2,400	7,000	19,700	a12,000	4,310	a2,100	1,300	1,500
17	1,500	2,000	2,120	1,980	2,400	7,000	22,700	11,100	4,170	a2,000	1,260	1,500
18	1,500	2,000	2,070	1,980	2,500	7,420	26,600	10,800	4,100	a1,900	1,260	1,540
19	1,550	2,000	2,020	2,020	2,550	8,880	28,800	10,300	3,950	a1,900	1,300	1,540
20	1,600	2,020	2,070	1,980	2,700	9,940	29,200	10,100	3,750	1,850	1,300	1,570
21	1,600	1,980	2,020	2,020	2,810	10,200	28,100	9,820	3,680	1,890	1,300	1,650
22	1,600	1,980	2,070	2,020	2,810	10,300	25,300	9,590	3,620	1,810	1,300	1,690
23	1,600	1,980	2,160	2,070	2,760	10,200	24,400	9,350	3,490	1,810	1,300	1,730
24	1,650	1,980	2,160	2,210	2,650	10,600	24,400	9,000	3,430	1,770	1,260	1,770
25	1,650	2,020	2,160	2,210	2,700	10,400	a25,000	8,650	3,430	1,770	1,230	1,770
26	1,650	2,020	2,120	2,210	3,020	10,900	a25,500	8,310	3,430	1,730	1,260	1,690
27	1,700	2,020	2,160	2,260	3,250	11,300	a26,000	7,860	3,370	1,730	1,260	1,690
28	1,700	2,020	2,160	2,860	3,250	11,700	a26,000	7,640	3,370	1,730	1,260	a1,700
29	1,700	2,020	2,160	2,450	3,140	12,400	25,500	7,420	3,370	1,730	1,300	a1,750
30	1,700	2,020	2,120	2,400	-	11,900	24,600	7,100	3,310	1,690	1,300	a1,750
31	1,700	-	2,020	2,400	-	12,400	-	6,900	-	1,650	1,260	-
Total	44,850	57,360	67,600	66,000	73,900	302,300	640,000	415,040	136,690	67,830	42,520	44,900
Mean	1,447	1,912	2,181	2,129	2,548	9,752	21,330	13,390	4,556	2,188	1,372	1,497
Ac-ft	88,960	113,800	134,100	130,900	146,600	599,600	1,269,000	823,200	271,100	134,500	84,340	89,060

Calendar year 1947 : Max - Min - Mean - Ac-ft
 Water year 1947-48 : Max 29,200 Min 1,100 Mean 5,352 Ac-ft 3,885,160

a No gage-height record; discharge interpolated.

HELMAND RIVER BASIN

4

Helmand River below Kajakai Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1948 to September 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,810	a2,300	2,400	2,650	3,300	3,880	20,000	a27,000	8,850	4,460	2,400	2,020
2	a1,810	a2,300	2,400	2,600	9,020	3,950	22,000	a25,000	8,540	4,390	2,400	2,020
3	a1,810	a2,350	2,450	2,500	5,370	4,100	24,000	a23,000	8,310	4,310	2,350	2,020
4	a1,810	a2,350	2,500	2,400	4,390	4,310	25,300	22,500	8,090	4,240	2,350	2,020
5	a1,810	a2,350	a2,500	2,260	3,880	4,460	25,100	22,000	7,860	a4,100	2,350	2,020
6	a1,810	a2,400	a2,500	2,160	3,620	4,460	25,500	21,600	7,640	a3,900	2,350	1,980
7	a1,850	a2,400	a2,500	2,120	3,370	4,540	26,800	21,500	7,530	a3,700	2,500	2,020
8	a1,850	a2,400	a2,500	2,160	3,190	4,700	26,600	21,300	7,420	a3,550	2,450	2,020
9	a1,850	a2,400	a2,500	2,210	3,140	9,620	29,200	20,900	7,210	3,430	2,450	2,020
10	1,850	a2,450	a2,500	2,300	3,250	29,400	38,200	20,400	7,000	3,370	2,400	2,020
11	1,810	a2,450	a2,600	2,350	3,310	22,500	a30,000	19,700	6,900	3,310	2,300	2,020
12	a1,850	a2,450	a2,600	2,400	3,370	13,700	a25,000	19,300	6,590	3,190	2,260	1,980
13	a1,850	a2,450	a2,600	2,300	3,370	12,000	24,400	18,100	6,390	3,140	2,210	1,980
14	a1,900	a2,450	a2,600	2,300	3,370	11,600	33,300	17,000	6,200	3,080	2,160	1,980
15	a1,900	a2,400	a2,600	2,450	3,310	11,500	a32,000	15,900	6,000	3,020	2,160	1,980
16	a1,900	a2,400	a2,600	2,450	3,310	11,200	a31,000	15,200	5,910	2,970	2,120	1,980
17	a1,950	a2,400	a2,600	2,500	3,310	10,800	a30,000	14,800	5,720	2,920	2,120	1,980
18	a1,950	a2,400	a2,650	2,500	3,310	10,400	a30,000	14,500	5,630	2,920	2,120	2,020
19	a2,000	a2,450	a2,650	2,550	3,310	10,100	a31,000	14,000	5,540	2,860	2,120	2,020
20	a2,000	a2,450	2,650	2,550	3,430	10,600	a32,000	13,600	5,460	2,810	2,070	2,020
21	a2,000	a2,450	2,600	2,600	3,560	11,500	32,500	13,000	5,370	2,760	2,070	2,020
22	a2,050	a2,450	2,550	2,760	4,460	11,700	33,100	12,400	5,280	2,700	2,070	2,020
23	a2,050	a2,450	2,600	2,810	5,910	12,600	a34,000	12,400	5,190	2,650	2,070	2,020
24	a2,050	a2,450	2,600	3,020	5,370	13,100	a35,000	12,400	5,110	2,600	2,070	2,020
25	a2,100	a2,450	2,450	3,250	4,860	12,800	a37,000	12,600	5,020	2,600	2,070	2,070
26	a2,100	a2,400	2,350	3,020	4,460	12,700	a40,000	13,000	4,940	2,550	2,020	2,070
27	a2,150	a2,400	2,450	2,810	4,170	13,100	45,000	11,900	4,860	2,550	2,020	2,120
28	a2,150	2,400	2,550	2,810	4,100	14,600	a40,000	10,900	4,780	2,500	2,020	2,120
29	a2,200	2,400	2,450	2,760	-	18,600	a35,000	10,200	4,620	2,500	2,020	2,160
30	a2,250	2,400	2,450	2,700	-	21,600	a30,000	9,700	4,540	2,450	2,020	2,160
31	2,260	-	2,550	2,810	-	20,500	-	9,230	-	2,450	2,020	-
Total	60,730	72,250	78,500	79,060	112,820	360,620	923,600	515,030	188,530	97,980	68,110	60,900
Mean	1,959	2,408	2,532	2,550	4,029	11,630	30,790	16,610	6,284	3,161	2,197	2,030
Ac-ft	120,500	143,300	155,700	156,800	223,800	715,300	1,832,000	1,022,000	373,900	194,300	135,100	120,800

Calendar year 1948 : Max 29,200 Min 1,100 Mean 5,466 Ac-ft 3,967,800
 Water year 1948-49 : Max 45,000 Min 1,810 Mean 7,173 Ac-ft 5,193,500

Peak discharge (base, 21,000 cfs).--Mar. 10 (11:30 p.m.) 38,200 cfs (3.13 m); Apr. 10 (time and discharge unknown); Apr. 26 or 27 (time unknown) 50,100 cfs (3.79 m).

a No gage-height record; discharge interpolated or estimated on basis of weather records, flood marks and recession curves.

HELMAND RIVER BASIN

4

Helmand River below Kajakai Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,120	2,810	3,140	3,020	4,620	5,110	13,400	25,100	17,200	4,940	2,450	al,980
2	2,160	2,860	3,140	3,020	4,020	5,460	15,900	25,900	16,000	4,860	2,300	al,980
3	2,210	2,860	3,080	3,020	3,680	5,630	15,900	26,000	15,200	4,780	2,260	al,980
4	2,260	2,920	2,970	2,920	3,490	5,630	14,600	26,600	14,600	4,620	2,210	al,980
5	2,300	2,920	2,970	2,700	3,490	5,540	14,200	29,000	14,000	4,390	2,160	al,980
6	2,400	2,920	2,970	2,600	3,750	5,460	13,900	32,000	13,600	4,310	2,120	al,980
7	2,450	2,920	2,970	2,600	4,230	5,630	13,400	31,000	13,300	4,240	2,070	al,980
8	2,450	2,920	2,970	2,650	4,780	5,910	13,600	30,800	13,300	4,100	2,020	al,980
9	2,500	2,920	3,080	2,810	4,780	6,290	13,700	30,700	12,600	3,950	2,020	al,980
10	2,550	2,920	3,190	2,970	4,700	6,590	14,200	32,900	12,100	3,880	2,020	al,980
11	2,550	2,970	3,250	3,020	4,460	7,860	15,200	36,200	11,900	3,880	1,980	al,980
12	2,500	2,970	3,310	3,140	4,230	8,880	17,400	34,400	11,500	3,820	al,980	1,980
13	2,500	2,970	3,310	3,250	4,020	8,540	19,300	33,300	10,900	3,820	al,980	1,980
14	2,500	2,970	3,250	3,250	4,100	8,310	19,500	31,000	10,300	3,750	al,980	1,980
15	2,500	2,970	3,190	3,250	4,100	7,980	20,000	30,700	10,100	3,680	al,980	2,020
16	2,550	2,970	3,140	3,250	4,020	7,750	21,100	30,500	49,700	3,620	al,980	2,020
17	2,550	2,920	3,140	3,190	3,950	7,860	19,700	31,400	49,400	3,560	al,980	2,020
18	2,600	2,920	3,140	3,190	3,880	7,860	19,300	31,400	49,000	3,490	al,980	2,020
19	2,600	2,920	3,080	3,190	3,750	7,640	18,900	30,800	48,600	3,370	al,980	2,020
20	2,600	2,920	3,080	3,140	3,750	8,770	18,300	30,300	48,300	3,310	al,980	2,020
21	2,650	2,970	3,020	3,080	3,820	10,600	17,000	29,000	48,000	3,250	al,980	2,020
22	2,650	2,970	3,020	2,970	3,820	11,700	18,100	27,000	47,600	3,250	al,980	2,020
23	2,650	2,970	3,020	2,810	3,820	10,900	18,100	25,500	47,300	3,190	al,980	2,020
24	2,700	2,970	3,020	2,700	3,820	10,200	15,900	24,600	46,900	3,140	al,980	2,020
25	2,700	2,970	2,970	2,760	3,880	9,590	15,400	23,300	46,500	3,080	al,980	2,020
26	2,760	2,970	2,920	3,880	4,100	9,230	16,400	21,600	46,200	3,020	al,980	2,020
27	2,760	3,020	2,760	3,820	4,460	8,770	18,100	20,400	45,900	2,970	al,980	2,020
28	2,760	3,140	2,700	6,240	4,780	8,310	19,800	20,400	45,600	2,860	al,980	2,020
29	2,760	3,190	2,810	12,100	-	8,310	22,200	19,700	5,370	2,760	al,980	2,020
30	2,810	3,190	2,920	6,490	-	8,650	24,000	18,900	5,110	2,650	al,980	2,020
31	2,810	-	3,020	5,370	-	8,770	-	18,300	-	2,550	1,980	-
Total	78,860	88,830	94,550	112,400	114,300	243,730	516,500	858,700	306,080	113,090	63,210	60,040
Mean	2,544	2,961	3,050	3,626	4,082	7,862	17,220	27,700	10,200	3,618	2,039	2,001
Ac-ft	156,400	176,200	187,500	222,900	226,700	483,400	1,024,000	1,703,000	607,100	224,300	125,400	119,100

Calendar year 1949 : Max 45,000 Min 1,980 Mean 7,312 Ac-ft 5,294,100
 Water year 1949-50 : Max 36,200 Min 1,980 Mean 7,261 Ac-ft 5,256,000

Peak discharge (base, 21,000 cfs).--Jan. 29 (5 a.m.) 21,600 cfs (2.19 m); May 11 (1 p.m.) 37,300 cfs (3.10 m).

a No gage-height record; discharge interpolated.

HELMAND RIVER BASIN

4

Helmand River below Kajakai Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a2,000	2,700	2,810	2,700	2,700	a4,600	14,900	35,100	24,400	a7,000	a3,100	a2,300
2	a2,000	2,700	2,810	2,700	2,700	a4,800	15,600	34,700	21,800	a6,800	a3,000	a2,300
3	a2,000	2,700	2,760	2,700	2,700	a5,100	15,600	28,600	19,700	a6,500	a2,900	a2,300
4	2,020	2,700	2,700	2,700	2,600	a5,400	15,400	30,300	18,900	a6,300	a2,900	2,300
5	2,160	2,700	2,700	2,650	2,500	a5,800	15,200	30,100	17,900	a6,100	a2,800	2,300
6	a2,300	2,700	2,760	2,700	2,500	6,590	15,100	41,000	17,000	a5,900	a2,700	2,300
7	2,350	2,700	2,760	2,860	2,760	7,980	15,200	47,500	16,500	a5,800	a2,700	2,350
8	2,450	2,700	2,760	2,860	3,140	8,540	15,100	44,200	15,900	a5,600	a2,600	2,350
9	2,450	2,700	2,810	2,810	3,250	10,700	14,600	37,200	15,100	a5,400	a2,600	2,350
10	2,450	2,700	2,860	3,140	3,190	10,800	14,200	35,100	14,600	a5,200	a2,500	2,300
11	2,450	2,700	2,920	3,310	3,140	9,700	15,100	34,200	14,500	5,020	a2,500	2,300
12	2,450	2,700	2,920	3,190	3,080	9,350	17,400	34,400	13,900	4,780	a2,500	2,300
13	2,500	2,700	2,810	3,190	2,970	8,770	21,800	38,800	13,300	4,620	a2,500	2,300
14	2,500	2,700	2,810	3,080	2,860	9,120	24,900	36,200	12,600	4,460	a2,500	2,300
15	2,500	2,700	2,760	2,970	2,760	10,300	25,700	32,900	12,000	4,390	a2,500	2,400
16	2,500	2,700	2,700	2,810	2,760	14,300	26,000	31,400	11,500	4,310	a2,400	2,450
17	2,550	2,650	2,700	2,700	2,760	15,100	26,000	30,800	10,800	4,240	a2,400	2,450
18	2,600	2,650	2,650	2,700	2,970	14,000	27,100	30,800	10,400	4,100	a2,400	2,350
19	2,600	2,650	2,600	2,650	3,430	12,700	26,400	31,000	10,100	4,020	a2,400	2,350
20	2,600	2,650	2,600	2,650	3,880	11,900	25,300	31,600	9,590	3,950	a2,400	a2,300
21	2,600	2,650	2,600	2,600	3,560	11,100	24,900	30,800	9,470	3,880	a2,400	a2,300
22	2,600	2,650	2,600	2,600	3,430	10,700	25,300	30,700	9,120	3,820	a2,400	a2,300
23	2,650	2,650	2,600	2,550	3,560	10,800	27,700	30,100	8,880	3,880	a2,300	a2,300
24	2,650	2,650	2,550	2,550	a3,700	12,300	28,300	29,700	8,770	3,820	a2,300	a2,300
25	2,650	2,650	2,500	2,550	a3,900	13,400	27,000	29,000	8,540	3,680	a2,300	a2,300
26	2,650	2,650	2,400	2,600	a4,000	15,700	27,100	28,400	a8,300	3,560	a2,300	a2,300
27	2,650	2,700	2,400	2,650	a4,200	17,400	28,600	27,700	a8,000	3,430	a2,300	a2,300
28	2,650	2,760	2,450	2,650	a4,400	16,700	31,200	27,100	a7,800	3,430	a2,300	a2,300
29	2,700	2,810	2,450	2,700	-	16,000	33,300	26,600	a7,500	3,370	a2,300	a2,300
30	2,700	2,810	2,600	2,760	-	14,900	34,200	25,700	a7,300	3,310	a2,300	a2,300
31	2,700	-	2,700	2,760	-	14,500	-	25,300	-	3,190	a2,300	-
Total	76,630	80,780	83,050	86,040	89,400	339,050	674,200	1,007,000	384,170	143,860	77,800	69,650
Mean	2,472	2,693	2,679	2,775	3,193	10,940	22,470	32,480	12,810	4,641	2,510	2,322
Ac-ft	152,000	160,200	164,700	170,700	177,300	672,500	1,337,000	1,997,000	762,000	285,300	154,300	138,100

Calendar year 1950 : Max 36,200 Min 1,980 Mean 7,201 Ac-ft 5,213,000
 Water year 1950-51 : Max 47,500 Min 2,000 Mean 8,525 Ac-ft 6,171,000

Peak discharge (base 21,000 cfs).--May 7 (6:30 p.m.) 48,400 cfs (3.70 m).

a No gage-height record; discharge interpolated.

Helmand River below Kajakai Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,300	3,430	3,080	2,970	3,680	5,910	18,100	19,800	9,940	3,620	2,160	1,850
2	2,300	3,250	3,080	3,140	3,620	5,820	17,800	19,500	9,940	3,430	2,070	1,940
3	2,300	3,190	3,080	3,140	3,560	5,820	17,900	22,700	9,590	3,310	2,040	1,980
4	2,350	3,140	3,080	3,140	3,490	6,000	19,700	23,500	8,090	3,190	1,980	2,020
5	2,350	3,140	3,080	3,190	3,430	7,100	21,100	20,900	7,750	3,080	1,940	2,020
6	2,350	3,080	3,080	3,310	3,430	9,350	20,700	19,100	7,640	3,020	1,940	1,980
7	2,350	3,080	3,140	3,370	3,490	9,000	20,500	18,400	7,320	3,020	1,940	1,940
8	2,350	3,020	3,140	3,370	3,430	8,430	21,300	18,300	6,690	2,970	1,940	1,940
9	2,400	3,020	3,140	3,310	3,430	7,640	22,400	18,100	6,290	2,970	1,980	1,940
10	2,400	3,020	3,140	3,250	3,490	7,210	23,100	18,800	6,100	2,970	1,940	1,980
11	2,400	3,020	3,140	3,310	3,490	7,210	23,800	18,300	5,910	2,920	1,940	2,020
12	2,450	2,970	3,140	3,950	3,750	7,530	24,200	16,900	5,720	2,920	1,890	2,070
13	2,450	3,970	3,140	3,620	4,020	10,300	24,200	15,900	5,630	2,920	1,850	2,160
14	2,450	2,920	3,140	3,620	8,700	14,800	23,800	15,600	5,630	2,860	1,850	2,160
15	2,550	2,920	3,140	3,490	13,300	14,300	24,000	14,900	5,540	2,810	1,850	2,160
16	2,600	2,920	3,140	3,250	9,700	13,100	24,600	14,200	5,460	2,760	1,810	2,210
17	2,550	2,920	3,140	2,600	7,640	12,400	25,500	13,000	5,280	2,810	1,810	2,210
18	2,550	2,920	3,140	2,550	6,590	11,200	27,000	12,400	5,020	2,970	1,810	2,210
19	2,550	2,920	3,140	2,600	5,910	10,900	28,100	12,100	4,940	3,080	1,810	2,210
20	2,550	2,920	3,140	2,810	5,460	11,600	28,600	11,900	4,780	2,970	1,810	2,210
21	2,550	2,920	3,140	3,140	5,280	12,400	27,000	11,500	4,620	2,860	1,810	2,160
22	2,500	2,920	3,140	3,190	5,140	14,500	24,700	11,300	4,540	2,760	1,810	2,160
23	2,550	2,920	3,140	3,140	5,140	13,900	23,500	11,300	4,460	2,700	1,810	2,160
24	2,550	2,920	3,140	3,140	5,140	12,800	22,900	11,300	4,390	2,700	1,810	2,160
25	2,550	2,920	3,140	3,220	5,140	12,800	22,700	11,200	4,240	2,650	1,810	2,160
26	2,600	2,970	2,970	2,920	5,140	14,300	22,500	10,800	4,170	2,550	1,850	2,210
27	2,600	3,020	2,810	2,860	5,190	22,200	22,700	10,700	4,100	2,450	1,850	2,210
28	2,700	3,020	2,760	2,970	5,720	27,000	22,700	10,600	4,020	2,400	1,850	2,210
29	3,080	3,020	2,810	3,190	6,100	24,000	23,100	10,300	3,880	2,300	1,890	2,210
30	3,370	3,020	2,860	3,750	-	20,700	21,100	10,200	3,680	2,260	1,850	2,210
31	3,560	-	2,860	3,820	-	18,600	-	10,100	-	2,210	1,850	-
Total	79,160	90,420	95,210	99,330	151,600	379,920	689,400	463,600	175,360	88,440	58,550	63,060
Mean	2,554	3,014	3,071	3,204	5,228	12,260	22,980	14,950	5,845	2,853	1,889	2,102
Ac-ft	157,000	179,300	188,800	197,000	300,700	753,600	1,367,000	919,500	347,800	175,400	116,100	125,100

Calendar year 1951 : Max 47,500 Min 2,300 Mean 8,592 Ac-ft 6,219,000
 Water year 1951-52 : Max 28,600 Min 1,810 Mean 6,650 Ac-ft 4,827,000

Peak discharge (base, 21,000 cfs).--Mar. 28 (10 a.m.) 27,700 cfs (2.58 m); Apr. 20 (9 a.m.) 29,000 cfs (2.65 m); May 3 (8 a.m.) 24,200 cfs (2.39 m).

Note.--Discharge for Jan. 17 to Feb. 4, June 4 to July 20, computed from graph of once daily gage readings.

HELMAND RIVER BASIN

4

Helmand River below Kajakai Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,320	2,910	3,010	2,960	2,270	4,620	6,430	7,490	7,700	7,590	7,090	6,510
2	2,320	2,910	3,010	2,960	2,270	4,690	6,430	7,490	7,700	5,010	7,090	6,510
3	2,320	2,910	3,010	2,910	2,270	4,690	6,510	7,490	7,700	2,960	7,090	6,510
4	2,370	2,910	3,010	2,750	2,320	4,750	6,510	7,490	7,700	2,960	6,990	6,510
5	2,370	2,910	3,010	2,650	2,410	4,810	6,590	7,490	7,700	6,000	6,990	6,510
6	2,370	2,910	3,010	2,610	2,460	4,880	6,590	7,490	7,700	7,490	6,990	6,430
7	2,410	2,910	3,010	2,560	2,460	4,940	6,590	7,590	7,700	7,490	6,990	6,430
8	2,410	2,910	3,010	2,560	2,560	5,210	6,510	7,590	7,700	7,490	6,890	6,430
9	2,460	2,910	3,010	2,560	2,560	5,350	6,690	2,590	7,700	7,490	6,890	6,430
10	2,460	2,910	2,960	2,700	2,650	5,420	6,790	7,590	7,700	7,490	6,890	6,340
11	2,460	2,910	2,960	2,850	2,210	5,490	6,790	7,590	7,700	7,490	6,890	6,340
12	2,510	2,910	3,010	2,910	1,700	5,560	6,890	7,590	7,700	7,390	6,890	6,340
13	2,560	2,960	2,960	2,960	1,660	5,560	6,690	7,590	7,700	7,390	6,890	6,260
14	2,560	2,960	2,960	3,220	1,660	5,630	6,600	7,590	7,700	7,390	6,890	4,810
15	2,560	2,910	2,960	3,220	1,620	5,630	6,890	7,700	7,700	7,390	6,890	4,070
16	2,560	2,910	3,010	3,100	1,620	5,700	6,990	7,700	7,700	7,390	6,890	4,070
17	2,610	2,910	3,010	3,010	1,660	5,770	7,090	7,700	7,700	7,290	6,790	4,070
18	2,650	3,060	3,060	2,910	1,660	5,770	7,190	7,700	7,700	7,290	6,790	4,070
19	2,650	3,110	3,110	2,850	1,660	5,770	7,190	7,700	7,700	7,290	6,790	4,070
20	2,700	3,060	3,110	2,750	2,180	5,770	7,190	7,700	7,590	7,290	6,790	4,070
21	2,700	3,010	3,060	2,960	2,750	5,770	7,290	7,700	7,590	7,290	6,790	4,070
22	2,750	3,010	2,910	2,850	2,750	5,850	7,290	7,700	7,590	7,290	6,690	4,070
23	2,750	3,010	2,800	2,850	3,420	5,850	7,290	7,700	7,590	7,290	6,690	4,070
24	2,800	3,010	2,750	2,850	1,090	3,540	7,390	7,700	7,590	7,190	6,690	4,070
25	2,800	3,010	2,800	2,910	4,560	40	7,390	7,700	7,590	7,190	6,690	4,070
26	2,800	3,010	2,800	2,960	4,620	260	7,390	7,700	7,590	7,190	6,690	4,070
27	2,850	3,010	2,800	3,170	4,620	3,720	7,390	7,700	7,590	7,190	6,590	4,070
28	2,910	3,010	2,850	3,220	4,620	6,260	7,390	7,810	7,590	7,090	6,590	1,360
29	2,910	2,960	2,850	3,010	-	6,340	7,390	7,810	7,590	7,090	6,590	40
30	2,910	2,960	2,800	2,500	-	6,430	7,390	7,810	7,590	7,090	6,590	205
31	2,910	-	2,850	2,220	-	6,430	-	7,700	-	7,090	6,590	-
Total	80,720	88,800	91,410	88,500	70,290	156,500	208,750	236,890	229,790	214,560	211,590	142,875
Mean	2,604	2,960	2,949	2,855	2,510	5,048	6,958	7,642	7,660	6,921	6,825	4,762
Ac-ft	160,100	176,100	181,300	175,500	139,400	310,400	414,000	469,900	455,800	425,600	419,700	283,400

Calendar year 1952 : Max 28,600 Min 1,810 Mean 6,640 Ac-ft 4,820,000
 Water year 1952-53 : Max 7,810 Min 40 Mean 4,988 Ac-ft 3,611,200

Note.--Discharge regulated by Kajakai dam beginning Jan. 28.

a No gage-height record; discharge interpolated.

Helmand River below Kajakai Dam, Afghanistan

4

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,040	3,890	3,920	1,980	a6,020	a6,100	a7,190	31,600	13,500	a830	5,420	5,350
2	4,010	3,890	3,920	1,200	6,100	6,260	7,390	32,000	13,200	a820	5,420	5,350
3	4,010	3,890	2,210	a620	5,770	a6,100	7,440	32,200	13,000	1,340	5,350	5,350
4	4,010	3,860	a45	1,950	5,700	a6,100	7,490	32,000	12,700	4,940	5,350	5,350
5	4,010	3,830	22	1,480	6,100	a6,100	7,540	31,600	12,300	4,780	5,350	5,350
6	4,010	3,830	465	1,320	6,020	a6,100	7,590	31,000	12,100	4,620	5,350	5,350
7	4,010	3,830	4,070	2,020	6,020	a6,100	7,640	30,600	11,700	4,400	5,280	4,540
8	4,010	3,800	4,070	2,020	6,020	a6,100	7,700	29,700	11,300	4,370	5,350	4,250
9	4,010	3,720	4,070	a2,000	6,020	a6,100	7,760	28,600	11,000	4,370	5,350	4,250
10	3,980	2,500	4,070	a1,500	6,260	a6,100	7,810	27,600	10,400	4,370	5,350	4,250
11	3,980	40	4,070	a1,500	6,100	a6,100	7,810	27,000	10,200	4,370	5,350	4,250
12	3,980	a15	4,070	a1,500	6,100	a6,100	7,860	26,000	9,700	4,370	5,420	4,250
13	3,950	a15	4,070	a1,500	6,180	a6,100	7,910	24,600	9,360	4,370	5,420	4,370
14	3,950	1,170	4,070	a2,000	6,180	a6,100	7,960	23,400	8,900	4,370	5,350	4,630
15	3,950	3,660	4,070	a2,000	6,180	a6,100	7,960	22,200	8,560	4,370	5,350	4,780
16	3,950	3,660	4,070	a2,000	6,180	a6,100	8,020	21,400	8,240	4,370	5,350	4,780
17	3,950	3,660	4,070	a2,000	6,180	a6,100	8,080	20,600	8,020	4,370	5,350	4,780
18	3,950	3,660	4,070	a2,000	6,180	a6,180	8,350	20,000	7,910	4,370	5,420	4,750
19	3,950	3,660	4,010	a4,100	6,180	a6,180	11,000	19,500	7,700	4,370	5,350	4,750
20	3,950	3,660	4,010	a4,100	6,180	a6,180	14,900	18,900	7,700	4,370	5,350	4,750
21	3,950	3,660	2,670	a4,100	6,180	a6,260	18,600	18,200	7,700	4,370	5,350	4,690
22	3,920	3,640	a40	a4,100	6,180	a6,340	22,200	17,600	7,700	4,370	5,420	4,750
23	3,920	3,740	a35	a4,100	6,180	a6,340	26,600	17,100	7,700	4,370	5,350	4,750
24	3,920	3,950	a35	a4,100	6,180	a6,430	29,000	16,400	7,700	4,370	5,420	4,750
25	3,920	3,950	a35	a4,100	6,340	a6,510	30,000	16,000	7,590	4,490	5,420	4,300
26	3,920	3,950	a35	a4,100	6,180	a6,590	30,000	15,500	7,590	5,140	5,420	3,720
27	3,920	3,920	a30	a5,000	6,180	a6,590	30,000	15,100	7,590	5,490	5,420	3,720
28	3,890	3,920	a30	a6,020	6,340	a6,690	30,400	14,800	7,700	5,420	5,350	3,720
29	3,890	3,920	1,600	a6,020	-	a6,790	30,800	14,400	5,000	5,420	5,350	3,610
30	3,890	3,920	1,980	a6,020	-	a6,890	31,200	14,000	828	5,420	5,350	3,830
31	3,890	-	1,980	a6,020	-	a6,990	-	13,800	-	5,420	5,350	-
Total	122,690	98,810	75,912	92,490	171,430	194,820	144,200	703,400	274,588	132,820	166,480	137,320
Mean	3,958	3,294	2,449	2,984	6,122	6,285	14,810	22,690	9,153	4,285	5,370	4,577
Ac-ft	243,400	196,000	150,600	183,500	340,000	386,400	881,100	1,395,000	544,600	263,400	330,200	272,400

Calendar year 1953 : Max 7,810 Min 15 Mean 5,088 Ac-ft 3,683,700
 Water year 1953-54 : Max 32,200 Min 15 Mean 7,164 Ac-ft 5,186,600

a No gage-height record; discharge estimated on basis of study of reservoir releases.

HELMAND RIVER BASIN

5

Seraj Canal at Sangin, Afghanistan

Location.--Lat. $32^{\circ}03'$ N., long. $64^{\circ}50'$ E., on left bank about 100 meters upstream from office of alaqadar of Sangin district in village of Sangin, about 500 meters downstream from canal inlet and control gate structure on Helmand River, 35 kilometers northeast of Girishk, and about 40 kilometers downstream from Kajakai dam on the Helmand River.

Records available.--October 1952 to September 1954.

Gage.--Staff gage read twice daily.

Extremes.--1952-53: Maximum daily discharge, 445 cfs May 1; minimum daily, 88 cfs Sept. 29, 30.

1953-54: Maximum daily discharge, 593 cfs Apr. 21, 1954; minimum daily, 10 cfs (estimated) on many days in 1954 (seepage when gates closed.)

Remarks.--Records good except those for periods of no gage-height record, which are poor. Water is diverted from left bank of Helmand River for irrigation of about 24,000 acres extending from Sangin to Yakchal and southwesterly toward Kala Bist.

HELMAND RIVER BASIN

Seraj Canal at Sangin, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	253	271	247	236	212	207	236	445				
2	259	265	247	236	203	207	236	432				
3	253	265	247	203	203	212	236	426				
4	259	265	247	230	166	212	242	432	410			
5	253	259	247	224	166	212	236	432				290
6	259	259	247	224	166	218	236	401				
7	259	259	247	224	171	224	236	426				
8	265	265	247	224	212	224	236		400			
9	271	259	247	224	224	224	236					280
10	271	265	242	224	224	224	236					
11	271	265	242	218	230	224	230					
12	277	259	236	212	230	224	230					
13	277	259	242	218	224	230	224		390			
14	283	259	242	212	224	224	224			340		
15	283	259	247	224	224	230	224	426		310		
16	283	236	247	230	230	236	218					260
17	283	242	247	224	230	230	212					180
18	271	247	247	218	230	230	212		380			180
19	277	259	247	212	194	224	212					180
20	271	253	194	224	194	224	207					180
21	265	247	194	230	189	218	438					180
22	259	247	230	236	189	212	383					180
23	259	247	230	236	189	218	438		370			180
24	259	247	224	236	194	224	432					212
25	259	236	224	236	194	218	321					212
26	259	236	230	224	203	224	321		360			224
27	259	247	230	230	203	224	414	426	355			242
28	259	247	230	230	203	224	401	420	555			212
29	265	247	230	224	-	224	417	420	352			88
30	259	247	236	224	-	224	321	420	350			88
31	271	-	236	212	-	236	-	420	-			-
Total	8,251	7,618	7,350	6,959	5,721	6,886	8,275	13,194	11,522	10,540	9,610	7,048
Mean	266	254	237	224	204	222	276	426	384	340	310	235
Ac-ft	16,370	15,110	14,580	13,800	11,350	13,600	16,410	26,170	22,850	20,910	19,060	14,000

Calendar year Max - Mean - Ac-ft -
 Water year 1952-53: Max 445 Min 88 Mean 281 Ac-ft 204,270

Note.--No gage height record May 8-26, May 28 to June 28, June 30 to Sept. 16, Sept. 18-25, discharge interpolated or computed on basis of Helmand River records.

HELMAND RIVER BASIN

5

Seraj Canal at Sangin, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	146	253	296	106		166	445	345	271	410	171	327
2	259	271	296	106		166	395	358	236	410	4170	321
3	283	296	296			162	358	370	212	450	4170	321
4	321	308	4100			166	358	333	203	118	4170	308
5	321	296	10			162	345	333	194	118	339	308
6	265	308	4100			162	333	345	184	125	383	308
7	247	308	271		200	158	321	432	175	194	420	308
8	236	308	296			158	321	407	166	333	236	308
9	277	308	302			184	314	414	146	407	410	308
10	259	302	302			166	314	358	133	438	410	302
11	271	12	296	110		166	333	358	121	443	407	302
12	283	412	302			184	426	333	114	457	407	302
13	271	412	302			189	426	321	103	463	401	302
14	283	4100	302			224	420	296	95	463	401	290
15	259	247	296			158	420	283	95	457	395	283
16	259	271	296			175	407	364	92	463	395	277
17	259	271	296		333	175	414	407	88	463	389	277
18	259	271	296		308	175	414	414	88	457	383	277
19	259	271	296		236	175	450	395	88	457	383	271
20	259	271	296		203	175	500	383	88	451	370	277
21	259	271	290	198		166	593	370	283	445	370	271
22	259	271	4100	189		166	401	358	333	438	370	271
23	259	271	410	184		171	327	352	352	426	370	277
24	247	296	410	180		162	327	333	352	426	358	290
25	247	296	410	166		166	333	327	345	426	364	290
26	247	302	410	150	175	162	327	327	345	420	358	162
27	242	296	410	166		158	308	308	339	383	345	154
28	242	296	410	166		158	302	290	4100	321	345	150
29	247	302	450	-		158	302	203	410	259	376	154
30	236	296	103	-		562	321	198	410	166	339	162
31	242	-	103	-		469	-	296	-	450	333	-
Total	8,003	7,593	5,953	3,842	5,704	5,944	11,255	10,611	5,361	10,137	9,938	8,158
Mean	258	253	192	124	204	192	375	342	179	327	321	272
Ac-ft	15,870	15,060	11,810	7,620	11,310	11,790	22,320	21,050	10,630	20,110	19,710	16,180

Calendar year 1953: Max 445 Min 10 Mean 278 Ac-ft 201,050
 Water year 1953-54: Max 593 Min 10 Mean 253 Ac-ft 183,460

a No gage-height record as stage below bottom of staff gage or not read; no gage-height record Jan. 3 to Feb. 16; discharge interpolated or estimated on basis of canal closing or estimated.

HELMAND RIVER BASIN

6

Musa Qala River at Musa Qala, Afghanistan

Location.--Lat. $32^{\circ}20'$ N., long. $64^{\circ}46'$ E., on left bank at south end of village of Musa Qala, about 29 kilometers upstream from mouth and Helmand River, and 60 kilometers north of Girishk.

Drainage area.--1,450 square miles, approximately.

Records available.--April 1952 to September 1954.

Gage.--Staff gage read twice daily. Altitude of gage is about 970 kilometers (from comparison with Helmand River below Kajakai dam elevation of 960 meters).

Extremes.--1952: Maximum discharge during period April to September not determined; no flow Aug. 25-31. 1952-53: Maximum daily discharge, 6,620 cfs Feb. 14; no flow Aug. 25 to Sept. 1.

1953-54: Maximum discharge, 7,600 cfs Apr. 5 (gage-height, 1.56 meters from floodmark), from rating curve extended above 400 cfs on basis of slope-area determination at gage-heights 1.56 meters and 2.53 meters; minimum, 2 cfs on many days.

Remarks.--Records poor prior to May 1954, fair thereafter. Many small diversions for irrigation above and below the station which irrigate all bottom lands along the river.

HELMAND RIVER BASIN

6

Musa Qala River at Musa Qala, Afghanistan

Discharge, in cubic feet per second, period April to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	108	34	10	8	1
2							-	100	34	8	8	1
3							-	195	27	8	8	1
4							-	243	27	8	6	1
5							-	195	21	12	6	1
6							-	173	21	12	6	1
7							-	132	21	12	4	1
8							-	116	21	10	2	1
9							-	100	18	8	2	1
10							-	91	18	8	2	1
11							-	83	18	8	2	1
12							-	68	16	8	2	1
13							-	54	16	8	2	2
14							-	43	16	8	2	1
15							-	39	16	8	2	1
16							-	34	14	8	2	1
17							-	34	14	8	2	2
18							-	39	14	8	2	2
19							-	39	12	8	2	2
20							-	34	12	8	1	2
21							219	34	12	8	1	2
22							219	34	12	8	1	2
23							195	31	12	8	1	2
24							195	34	12	8	1	4
25							173	34	12	8	0	4
26							151	31	12	8	0	3
27							140	31	12	8	0	3
28							132	34	12	8	0	2
29							124	39	12	8	0	2
30							116	34	10	8	0	2
31							-	34	-	8	0	-
Total							-	2,290	508	264	75	51
Mean							-	73.9	16.9	8.5	2.4	1.7
Ac-ft							-	4,540	1,010	512	148	101
Calendar year	:	Max		Min	Mean			Ac-ft				
Water year	:	Max		Min	Mean			Ac-ft				

HELMAND RIVER BASIN
Musa Qala River at Musa Qala, Afghanistan

6

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2	2	6	8	12	132	243	34	116	16	8	0
2	2	2	6	8	12	151	219	34	162	16	6	1
3	2	2	6	8	16	162	195	27	243	16	6	1
4	2	2	6	8	27	219	184	27	315	16	6	1
5	2	2	6	10	43	243	173	27	402	16	6	1
6	2	2	6	12	83	279	151	27	446	16	6	1
7	2	2	6	12	116	344	132	27	350	16	6	1
8	4	2	6	12	184	431	116	27	267	16	6	2
9	8	2	8	12	267	402	195	21	200	16	6	2
10	8	2	8	16	640	373	373	21	116	16	6	2
11	2	2	8	16	1,400	344	762	21	100	16	6	2
12	2	2	7	16	2,460	315	1,400	21	83	16	4	2
13	2	2	8	21	3,210	291	2,130	21	68	16	4	2
14	2	2	8	27	6,620	267	2,810	21	54	16	4	4
15	2	2	8	21	d 2,000	243	3,830	21	43	16	4	2
16	2	2	12	16	d 1,000	219	1,000	21	34	16	4	
17	2	2	12	14	d 500	195	d 500	21	27	16	4	
18	2	2	12	14	d 300	195	267	21	21	16	2	
19	2	2	12	12	219	195	d 200	21	21	16	2	
20	2	2	12	12	195	193	116	21	21	16	2	
21	2	2	12	12	173	151	100	21	21	16	1	
22	2	2	12	12	173	132	83	21	21	16	1	
23	2	2	12	12	151	195	68	21	16	16	1	
24	2	2	12	12	151	243	54	21	16	16	1	
25	3	2	8	12	151	315	54	27	16	16	0	
26	4	2	8	8	83	431	43	34	16	12	0	
27	4	4	8	8	83	416	43	43	16	12	0	
28	3	4	8	8	83	344	43	54	16	12	0	
29	2	5	8	8	-	315	34	68	16	12	0	
30	2	5	7	8	-	291	34	83	16	8	0	
31	2	-	10	12	-	267	-	100	-	8	0	-
Total	82	70	268	387	20,352	8,273	15,552	975	3,259	464	102	69
Mean	2.6	2.3	8.6	12.5	727	265	518	31.4	109	15.0	3.3	2.3
Ac-ft	162	139	532	768	40,370	16,400	30,850	1,930	6,460	920	202	137

Calendar year : Max - Min - Mean - Ac-ft -
Water year 1952-53: Max 6,620 Min 0 Mean 137 Ac-ft 98,870

d Doubtful gage-height record; discharge estimated on basis of recession curve or interpolated.
Note.--No gage-height record Sept. 16-30; discharge estimated on basis of known low water conditions.

HELMAND RIVER BASIN

6

Musa Qala River at Musa Qala, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				500	34	303	460	400	75	18	3	2
2				291	34	255	1,400	373	75	18	3	2
3				231	34	243	1,270	358	75	18	3	2
4				184	34	219	5,170	315	75	18	3	2
5				151	34	195	5,880	303	68	18	3	2
6					108	34	184	1,670	966	60	18	2
7					21	34	184	4,840	830	60	18	2
8					43	291	184	5,170	431	60	18	3
9					34	2,650	173	3,370	402	60	18	3
10					31	3,920	416	2,730	373	60	18	3
11					27	2,460	303	2,810	358	60	15	3
12					27	1,450	279	2,060	315	60	10	3
13					27	1,560	279	1,140	303	49	4	3
14					27	1,140	279	600	279	39	4	3
15	5	10			27	1,220	303	358	243	24	4	3
16					27	2,060	358	315	267	21	4	3
17					27	966	402	279	243	18	4	2
18					27	500	267	243	231	18	4	2
19					27	416	267	207	207	14	4	2
20					27	388	402	195	173	18	4	2
21					27	373	640	373	162	18	4	3
22					27	330	694	1,220	151	18	4	2
23					27	330	460	500	132	18	4	2
24					27	330	400	358	124	18	4	3
25					27	303	450	279	108	18	4	3
26					27	303	500	207	108	18	4	2
27				100	27	267	480	140	100	18	4	2
28				68	303	431	388	91	18	4	2	2
29				200	83	-	388	388	83	18	4	3
30				402	43	-	358	400	83	18	4	3
31			-	330	34	-	291	-	75	-	4	-
Total	155	300	1,812	2,281	21,798	10,587	44,390	8,587	1,169	281	86	66
Mean	5	10	58.5	73.6	778	342	1,480	277	38.9	9.0	2.8	2.2
Ac-ft	307	595	3,590	4,520	43,240	21,000	88,050	17,030	2,320	557	171	131

Calendar year 1953: Max 6,620 Min 0 Mean 141 Ac-ft 102,000
 Water year 1954: Max 5,880 Min 2 Mean 251 Ac-ft 181,600

a No gage-height record; discharge interpolated.

Note.--No gage-height record Oct. 1 to Dec. 29; discharge estimated on basis of known low water conditions at the station.

HELMAND RIVER BASIN

7

Argandab River above Arghandab Reservoir, near Kandahar, Afghanistan

Location.--Lat. $31^{\circ}57'N$, long. $66^{\circ}01'E$, on right bank about 30 kilometers upstream from Arghandab dam, and about 50 kilometers northeast of Kandahar.

Drainage area.--6,540 square miles (from Survey of India maps); 640 square miles believed non-contributing.

Records available.--March to September 1951 (gage heights only); October 1951 to September 1955.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (from MKA surveys from Survey of India datum). Prior to Jan. 13, 1952, staff gage at same site and datum.

Extremes.--Maximum and minimum discharges for the water years 1952-55 are contained in the following table:

Water year	Date	Maximum		Minimum	
		Discharge (cfs)	Elevation (meters)	Date	Discharge (cfs)
1952	Feb. 14, 1952	7,170	1,115.41	Sept. 23-26, 1952	a232
1953	Feb. 12, 1953	12,500	1,116.00	(b)	71
1954	Mar. 30, 1954	14,100	1,116.10	Oct. 1, 2, 1953	145
1955	Mar. 15, 1955	9,860	1,115.76	Sept. 14, 1955	a64

a Minimum daily.

b July 29 to Aug. 2, 1953

1952-55: Maximum discharge, 14,100 cfs Mar. 30, 1954 (elevation, 1,116.10 meters); minimum daily, 64 cfs Sept. 14, 1955.

A floodmark, elevation 1,118.0 meters (about 42,000 cfs) is believed to be of 1939 flood.

Remarks.--Records good except those prior to December 1951 and October, November, July to September 1955; and those for periods of no gage-height record, which are fair. Many small diversions for irrigation above the station. Water is stored in Arghandab reservoir immediately downstream (capacity at spillway elevation of 1110.00 meters 388,000 acre-feet) for irrigation of about 150,000 acres in Arghandab valley.

HELMAND RIVER BASIN

7

Arghandab River above Arghandab Reservoir, Afghanistan

Discharge, in cubic feet per second, water year October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.
1	301	415	560	610	860	1,248	4,050	2,980	940	495	425	361
2	301	425	560	595	810	1,210	3,980	2,720	885	485	415	361
3	301	435	575	595	835	1,210	3,920	2,915	860	475	407	368
4	308	435	575	575	835	1,324	4,110	3,175	835	475	399	368
5	308	435	575	560	835	2,410	4,540	2,980	785	465	399	375
6	308	445	575	595	810	1,998	4,540	2,850	760	455	391	375
7	308	445	575	630	810	1,845	4,480	2,534	720	445	368	383
8	314	445	575	630	810	1,743	4,480	2,348	700	445	368	383
9	314	445	575	610	810	1,641	4,480	2,286	700	435	368	375
10	314	445	575	595	810	1,590	4,480	2,286	680	435	368	368
11	314	445	595	575	810	1,641	4,480	2,224	665	425	368	354
12	314	455	595	575	810	1,947	4,420	1,998	665	425	361	347
13	314	455	595	595	910	4,540	4,290	1,815	645	415	368	333
14	321	455	595	835	2,596	3,740	4,170	1,692	605	415	361	321
15	327	465	595	700	2,850	3,180	4,170	1,590	630	415	368	308
16	333	475	595	610	1,896	2,980	4,230	1,552	610	415	368	301
17	333	475	595	560	1,476	2,596	4,290	1,514	595	415	368	294
18	340	485	595	560	1,400	2,658	4,600	1,476	575	415	368	288
19	347	485	595	575	1,286	2,658	4,670	1,362	560	415	368	280
20	347	485	595	595	1,286	2,658	4,540	1,362	545	415	368	280
21	354	495	595	680	1,286	2,472	4,170	1,324	530	415	368	267
22	361	505	595	680	1,248	2,534	3,920	1,286	515	435	361	255
23	368	505	595	665	1,210	2,658	3,610	1,248	505	515	361	232
24	375	515	595	645	1,210	2,658	3,490	1,180	495	545	361	232
25	375	515	595	630	1,210	2,596	3,300	1,150	505	545	361	232
26	383	515	595	685	1,210	2,870	3,240	1,120	515	530	361	232
27	391	515	595	665	1,210	5,860	3,360	1,090	515	495	368	243
28	391	515	680	680	1,248	5,160	3,490	1,060	515	475	368	243
29	399	545	700	700	1,286	4,360	3,430	1,030	515	465	368	243
30	407	560	665	885	-	4,360	3,180	1,000	505	445	361	243
31	407	-	645	940	-	4,050	-	970	-	435	361	-
Total	10,578	14,265	18,525	19,990	34,664	81,395	122,050	56,147	19,115	14,080	11,573	9,245
Mean	341	476	598	645	1,195	2,625	4,068	1,811	637	454	373	308
Ac-ft	20,980	28,290	36,740	39,650	68,750	161,400	242,100	111,370	37,910	27,930	22,950	18,340

Calendar year 1951 : Max - Min - Mean - Ac-ft
 Water year 1951-52 : Max 5,860 Min 232 Mean 1,125 Ac-ft 111,626

Peak discharge (base, 8,000 cfs).--No peak above the base.

Note.--Discharge computed from once-daily gage reading Oct. 1 to Jan. 23.

HELMAND RIVER BASIN

7

Arghandab River above Arghandab Reservoir, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	253	395	495	534	478	1,970	1,480	935	805	202	71	94
2	253	395	513	534	478	1,890	1,450	857	857	202	71	a 95
3	264	395	495	513	534	1,830	1,420	831	1,220	191	78	a 100
4	264	410	495	513	688	1,860	1,380	805	1,220	179	86	a 100
5	275	425	495	513	596	1,770	1,350	805	1,060	179	86	a 105
6	286	443	495	495	555	2,010	1,350	784	909	179	93	a 105
7	299	443	495	495	534	2,330	1,380	763	784	179	109	a 105
8	299	460	495	495	555	2,280	1,380	742	a 670	168	115	a 110
9	299	460	513	513	626	2,130	1,420	721	a 600	191	168	a 110
10	324	460	513	513	4,130	2,010	1,520	700	a 540	227	156	a 115
11	337	478	513	534	1,190	1,970	1,590	700	a 490	252	156	a 120
12	350	495	513	534	4,010	1,890	1,810	657	a 450	252	162	a 120
13	350	495	513	622	4,790	1,770	1,850	657	a 420	227	150	a 125
14	350	495	513	555	3,860	1,730	1,850	657	a 390	227	140	a 130
15	365	495	513	534	2,480	1,730	1,730	636	a 360	215	140	a 130
16	365	495	513	534	2,090	1,700	1,590	615	a 340	202	140	a 132
17	365	495	534	495	1,930	1,620	1,450	594	a 320	191	132	136
18	365	478	534	495	1,830	1,520	1,350	576	a 300	179	122	136
19	365	478	534	513	1,660	1,480	1,290	557	a 290	168	114	136
20	380	478	534	513	1,560	1,420	1,190	576	a 270	156	114	136
21	380	478	513	478	1,480	1,380	1,190	576	a 260	136	104	115
22	380	478	513	478	1,450	1,380	1,160	557	a 250	136	104	115
23	380	478	513	478	1,420	1,420	1,130	557	a 240	127	104	136
24	395	478	513	478	1,420	2,050	1,060	538	a 230	118	96	136
25	380	478	513	478	1,480	1,970	987	557	a 225	109	104	136
26	380	495	534	478	1,660	1,850	961	1,090	a 220	100	104	115
27	380	513	534	478	1,810	1,770	961	1,290	a 215	86	104	115
28	380	513	513	478	1,970	1,700	935	1,190	a 210	78	104	115
29	380	513	513	478	-	1,620	935	1,060	a 205	71	a 100	115
30	380	513	534	478	-	1,590	883	935	202	71	a 100	115
31	380	-	534	478	-	1,520	-	857	-	71	a 100	-
Total	10,603	14,105	15,945	15,705	47,164	55,110	40,032	23,375	14,552	5,069	3,557	3,763
Mean	342	470	514	507	1,684	1,778	1,334	754	485	164	115	125
Ac-ft	21,030	27,980	31,630	31,150	193,550	109,300	79,400	46,360	28,860	10,050	7,060	7,460

Calendar year 1952 : Max 5,860 Min 232 Mean 1,117 Ac-ft 811,000
 Water year 1952-53 : Max 4,790 Min 71 Mean 682 Ac-ft 493,800

Peak discharge (base, 8,000 cfs).--Feb. 10 (1:30 a.m.) 11,600 cfs (15.93 m.); Feb. 12 (7:30 p.m.) 12,500 cfs (16.00 m.); Feb. 14 (11 a.m.) 5,800 cfs (15.21 m.).

a No gage-height record; discharge interpolated.

HELMAND RIVER BASIN

7

Arghandab River above Arghandab Reservoir, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	279	380	446	657	6,730	9,050	6,060	11,700	883	464	388
2	145	308	380	428	657	11,600	7,980	6,000	11,600	870	464	373
3	152	308	388	446	657	13,800	7,250	5,860	11,500	857	464	373
4	156	323	395	628	657	13,500	6,960	5,670	11,400	883	464	373
5	162	323	402	2,970	636	13,300	6,680	5,480	11,300	870	464	366
6	174	330	402	883	657	3,250	6,540	5,350	11,500	883	464	366
7	191	330	402	831	657	3,000	6,400	5,350	11,450	870	464	358
8	191	330	418	742	657	2,940	6,170	5,100	1,420	870	464	351
9	202	337	418	628	678	2,940	6,330	5,100	1,380	870	446	330
10	208	344	418	615	4,690	3,240	6,170	4,980	1,350	844	446	351
11	215	337	418	615	4,980	3,240	6,270	4,850	1,320	831	446	373
12	215	351	418	594	4,230	3,180	5,860	4,480	1,290	818	446	366
13	221	358	437	594	6,400	3,120	6,060	4,170	1,250	818	446	366
14	227	358	446	615	5,420	3,120	6,270	4,3,800	1,220	805	446	366
15	227	358	455	615	4,230	3,190	6,270	4,3,450	1,160	818	446	351
16	234	366	455	594	3,360	3,360	6,470	4,3,250	1,130	818	428	351
17	234	380	446	615	4,910	3,860	6,960	4,3,100	1,130	794	428	351
18	234	366	437	615	5,040	4,020	6,610	4,2,950	1,100	774	428	344
19	240	380	437	636	4,290	4,540	6,100	4,2,900	1,060	763	428	337
20	a 245	388	428	615	3,920	5,040	6,270	4,2,750	1,040	742	428	337
21	a 250	380	428	594	3,550	5,600	6,400	4,2,600	1,040	710	428	323
22	a 250	380	437	594	3,300	5,800	7,320	4,2,500	1,040	689	428	323
23	a 260	388	828	594	3,300	5,600	8,280	4,2,400	1,060	678	428	323
24	a 260	388	557	615	3,240	5,480	7,830	4,2,300	1,060	678	428	330
25	a 260	395	520	636	3,000	5,480	7,100	4,2,200	1,040	657	409	337
26	a 260	395	502	636	2,870	5,350	6,680	4,2,150	1,040	636	409	337
27	a 260	388	464	657	2,630	5,290	6,400	4,2,050	987	615	409	351
28	a 260	388	455	657	2,630	5,420	6,200	4,1,950	961	576	409	351
29	a 265	380	446	657	-	6,810	6,130	4,1,900	935	520	409	351
30	a 265	380	483	657	-	13,500	6,130	4,1,850	909	483	409	351
31	a 270	-	474	657	-	11,100	-	4,1,800	-	483	395	-
Total	6,878	10,731	13,974	21,679	81,903	149,400	202,040	114,350	36,372	23,406	13,535	10,548
Mean	222	358	451	699	2,925	4,819	6,735	3,689	1,212	755	437	352
Ac-ft	13,640	21,280	27,720	43,000	162,500	296,300	400,700	226,800	72,110	46,430	26,850	20,920

Calendar year 1953 : Max 4,790 Min 71 Mean 657 Ac-ft 475,800
 Water year 1953-54 : Max 13,500 Min 145 Mean 1,876 Ac-ft 1,358,000

Peak discharge (base, 8,000 cfs).—Feb. 10 (8 a.m.) 9,960 cfs (15.77 m.); Mar. 1 (7 a.m.) 11,600 cfs (15.93 m.); Mar. 30 (about 12 m.) 11,100 cfs (16.1 m.); Apr. 22 (4:30 p.m.) 9,530 cfs (15.72 m.).

a No gage-height record; discharge interpolated or computed on basis of records of Arghandab Reservoir and the station below dam.

HELMAND RIVER BASIN

7

Arghandab River above Arghandab Reservoir, Afghanistan
Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	352	540	638	625	612	562	1,560	860	599	213	120	80
2	352	550	638	754	586	550	1,450	846	562	206	120	80
3	373	560	651	716	599	538	1,380	806	550	198	120	80
4	373	580	664	690	638	527	1,360	793	538	198	120	80
5	404	580	651	690	625	515	1,320	931	550	190	120	80
6	404	580	651	716	612	515	1,260	1,220	562	183	115	78
7	426	580	625	716	612	503	1,200	1,590	573	177	115	78
8	436	580	625	690	612	492	1,150	1,610	573	177	115	78
9	436	600	638	664	612	515	1,120	1,560	550	177	115	78
10	457	600	638	664	599	527	1,090	1,520	527	171	115	78
11	457	610	638	690	599	573	1,080	1,500	503	171	110	78
12	457	620	638	703	599	677	1,240	1,430	503	165	110	74
13	468	620	638	677	586	903	1,240	1,280	480	159	110	71
14	480	620	651	651	586	3,680	1,180	1,150	468	154	110	64
15	492	620	651	651	573	8,640	1,120	1,020	457	159	110	68
16	503	640	651	664	573	5,310	1,090	903	436	154	110	71
17	503	640	651	651	573	3,490	1,060	793	415	148	110	71
18	503	640	651	651	573	2,820	1,030	716	394	142	110	74
19	515	640	638	651	562	2,440	1,000	664	394	142	110	78
20	527	640	638	664	562	2,220	945	651	373	136	110	82
21	527	650	638	651	562	2,090	889	651	353	130	100	82
22	527	660	638	651	562	1,960	860	651	333	130	100	87
23	527	660	638	651	562	1,790	860	664	324	130	100	87
24	515	660	638	638	573	1,720	832	974	315	124	100	92
25	527	660	638	638	573	1,650	846	1,300	296	124	100	96
26	527	660	625	612	573	1,540	874	1,480	278	124	95	106
27	538	660	625	612	573	1,470	860	1,340	259	120	90	110
28	527	660	625	638	573	1,610	889	1,180	252	120	90	115
29	527	650	625	664	-	1,920	889	945	252	120	90	120
30	527	638	625	664	-	1,750	903	846	236	120	90	120
31	530	-	612	638	-	1,610	-	703	-	120	90	-
Total	14,717	18,598	19,791	20,635	16,444	55,107	32,577	32,577	12,905	4,772	3,320	2,536
Mean	475	620	638	666	587	1,778	1,086	1,050	430	154	107	85
Ac-ft	29,190	36,890	39,250	40,930	32,620	109,300	64,620	64,620	25,600	9,460	6,590	5,030

Calendar year 1954 : Max 13,500 Min 323 Mean 1,935 Ac-ft 1,400,970
Water year 1954-55 : Max 8,640 Min 64 Mean 657 Ac-ft 464,100

Peak discharge (base, 8,000 cfs).—Mar. 15 (8 a.m.) 9,860 cfs (1,115.76 m.).

Note.—No gage-height record Oct. 31 to Nov. 29, July 28 to Sept. 10; discharge interpolated.

HELMAND RIVER BASIN

8

Arghandab Reservoir near Kandahar, Afghanistan

Location.--Lat. $31^{\circ}51'$ N., long. $65^{\circ}54'$ E., in gate control tower near right end of Arghandab dam on Arghandab River, about 35 kilometers northeast of Kandahar, about 90 kilometers upstream from Dori River, and about 185 kilometers upstream from the Helmand River.

Drainage area.--6,760 square miles, approximately (from Survey of India maps); 640 square miles believed non-contributing.

Records available.--February 1952 to September 1955.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (from MKA surveys based on Survey of India datum). Prior to Aug. 27, 1952, records are from temporary staff gages and by levels at same datum.

Extremes.--Maximum and minimum contents for the water years 1952-55 are contained in the following table:

Water year	Date	Maximum		Minimum	
		Capacity (acre-feet)	Elevation (meters)	Date	Capacity (acre-feet)
1952*	June 3, 4, 1952	275,000	1,105.22	--	--
1953	Apr. 16, 1953	292,800	1,105.99	Sept. 30, 1953	107,000
1954	Mar. 30, 1954	404,100	1,110.67	Jan. 4, 1954	50,400
1955	Oct. 1, 1954	258,800	1,104.42	Sept. 30, 1955	108,800

* Storage began 6 p.m. Feb. 24, 1952.

1952-55: Maximum capacity, 404,100 acre-ft Mar. 30, 1954 (elevation, 1,110.67 meters); minimum since Mar. 26, 1954, when reservoir first filled, 108,800 acre-ft Sept. 30, 1955 (elevation, 1,094.88 meters).

Remarks.--Reservoir is formed by earth-fill dam; storage began Feb. 24, 1952; dam completed in 1952. Capacity, 388,000 acre-ft between elevation 1,066.0 meters (center-line of irrigation outlet) and 1,110.00 meters (crest of ungated spillway) above mean sea level. No dead storage except for a proposed minimum operating level of 1,088.0 meters. Water is stored to supplement low water flow of Arghandab River for irrigation of about 150,000 acres in the Arghandab River valley and for a future installed power capacity of about 6,000 KW.

HELMAND RIVER BASIN

Arghandab Reservoir near Kandahar, Afghanistan
Contents at 12 p.m., in acre-feet, October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						11,300	119,000	242,600	275,400	250,800	221,700	193,400
2						12,400	122,700	245,000	275,600	249,800	220,800	193,200
3						13,600	128,200	245,600	275,800	248,800	220,000	192,900
4						14,700	132,600	247,600	275,800	247,800	218,900	192,600
5						17,000	138,400	250,000	275,400	247,200	218,100	192,100
6						20,000	143,800	252,100	274,500	245,800	216,900	191,600
7						23,300	143,900	253,600	273,900	245,200	215,600	191,100
8						24,200	153,800	254,800	273,600	243,800	214,600	190,800
9						25,800	158,700	255,700	273,200	242,800	213,700	190,300
10						27,300	163,600	256,100	272,800	241,800	212,900	190,000
11						28,800	168,700	256,900	271,900	240,600	213,400	189,500
12						30,100	173,300	257,600	271,000	239,600	213,400	189,200
13						34,400	178,100	258,600	270,000	238,500	212,700	188,900
14						41,200	182,500	260,100	268,700	237,400	211,900	188,400
15						46,100	187,600	260,700	267,600	236,400	210,700	188,100
16						46,700	192,100	261,300	266,600	235,200	209,100	187,800
17						53,900	196,700	262,200	264,900	234,000	207,000	187,300
18						57,000	200,900	263,000	263,900	233,000	205,400	187,000
19						59,800	205,700	264,900	262,800	232,000	203,700	186,700
20						63,000	210,900	266,000	262,200	231,000	202,900	186,200
21						66,100	214,800	267,200	261,300	230,000	201,200	185,900
22						69,600	218,900	268,100	260,100	229,000	200,100	185,500
23						73,000	222,400	269,300	258,600	228,300	198,900	185,100
24						600	76,200	225,200	269,900	257,400	227,200	197,300
25						3,000	79,300	227,800	270,600	255,900	227,000	196,300
26						5,000	82,500	230,000	271,400	254,800	226,700	195,200
27						7,800	87,700	230,300	272,300	254,200	226,200	194,000
28						9,000	97,500	234,400	273,000	253,600	225,300	193,900
29						10,300	103,900	237,600	273,600	252,700	224,600	193,700
30						-	108,200	240,200	274,100	251,900	223,600	193,500
31						-	113,700	-	274,800	-	222,600	193,400

HELMAND RIVER BASIN

8

Arghandab Reservoir near Kandahar, Afghanistan
Contents at 12 p.m., in acre-feet, October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	182,300	179,400	173,600	172,200	151,800	218,200	288,600	283,800	261,100	233,000	189,000	143,100
2	182,200	179,200	173,600	172,100	150,900	220,800	288,600	283,100	260,900	231,600	186,300	141,900
3	182,000	179,100	173,600	172,100	150,100	223,300	288,800	282,200	261,600	230,000	184,700	140,500
4	181,700	178,800	173,600	171,900	149,700	225,800	289,000	281,100	262,400	228,600	183,200	139,000
5	181,500	178,600	173,400	171,800	149,200	228,500	289,000	280,200	263,000	227,200	181,700	137,300
6	181,400	178,400	173,400	171,800	149,200	231,600	289,000	278,900	263,200	226,000	180,300	135,900
7	181,400	178,100	173,400	171,600	142,900	235,800	289,000	277,800	263,000	224,600	178,900	134,700
8	181,200	177,800	173,400	171,600	147,200	240,000	289,000	276,700	262,600	223,300	177,300	133,300
9	181,200	177,500	173,300	171,500	147,200	243,800	289,300	275,400	262,000	221,800	176,000	132,100
10	181,100	177,000	173,300	171,400	154,700	247,000	289,300	274,100	261,300	220,600	174,500	130,900
11	181,100	176,700	173,200	170,900	155,400	250,200	289,500	272,500	260,300	219,400	173,200	129,700
12	181,100	176,500	173,200	169,800	165,000	253,400	290,400	271,300	259,200	218,100	171,800	128,500
13	181,100	176,200	123,000	169,600	174,700	256,100	291,000	270,000	258,000	216,900	170,400	127,100
14	181,100	176,100	173,000	168,700	183,900	258,600	291,900	268,900	256,700	215,700	169,000	125,800
15	181,100	175,800	173,000	167,600	187,900	261,300	292,600	267,800	255,500	214,200	167,600	124,600
16	180,900	175,700	172,900	166,700	191,100	261,800	292,800	267,000	254,000	212,900	166,000	123,400
17	180,700	175,300	172,900	165,600	193,700	264,100	292,600	266,200	252,700	211,500	164,700	122,100
18	180,700	175,200	172,900	164,700	196,600	268,300	292,100	265,300	251,300	210,200	163,200	121,000
19	180,600	175,000	172,900	163,800	198,600	270,200	291,900	264,700	249,800	208,900	161,900	119,900
20	180,600	174,800	172,900	162,900	200,600	271,700	291,500	263,600	248,600	207,500	160,600	118,700
21	180,400	174,700	172,700	162,100	202,200	273,000	291,000	262,600	247,200	206,100	158,900	117,500
22	180,400	174,500	172,700	161,000	203,900	274,100	290,800	261,800	245,800	204,700	157,000	116,300
23	180,300	174,400	172,600	160,200	205,600	275,000	290,400	260,900	244,600	203,200	156,200	115,200
24	180,100	174,400	172,600	159,100	207,400	277,400	289,700	260,300	243,200	201,800	154,800	114,000
25	180,100	174,200	172,400	158,200	209,100	279,600	289,000	259,400	241,800	200,200	153,300	112,800
26	180,100	174,100	172,400	157,400	211,000	286,600	288,200	259,700	240,400	198,700	151,900	111,500
27	179,900	173,900	172,400	156,500	213,200	283,300	287,300	260,300	239,000	197,300	150,300	110,300
28	179,900	173,700	172,400	155,600	215,700	284,900	286,400	260,900	237,800	196,100	149,000	109,200
29	179,900	173,700	172,200	154,700	-	286,200	285,500	261,100	236,200	194,500	147,600	108,100
30	179,800	173,700	172,200	153,800	-	287,500	284,900	261,300	234,600	192,900	146,100	107,000
31	179,500	-	172,200	152,800	-	288,200	-	261,100	-	191,500	144,700	-

HELMAND RIVER BASIN

8

Arghandab Reservoir near Kandahar, Afghanistan

Contents at 12 p.m., in acre-feet, October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	105,900	76,600	59,300	51,100	64,600	232,600	398,300	394,500	386,600	369,000	340,000	299,700
2	104,700	75,900	58,900	50,800	65,200	240,400	397,400	394,200	386,100	368,300	339,300	297,100
3	103,800	75,200	58,500	50,500	65,800	247,000	396,600	394,200	385,400	367,600	338,100	296,700
4	102,800	74,500	57,900	51,600	66,300	253,400	396,200	394,000	384,400	366,600	336,900	295,300
5	101,600	73,800	57,600	58,100	67,000	259,200	395,900	393,800	383,400	366,200	335,700	293,900
6	100,500	73,000	57,200	59,200	67,600	264,700	395,700	393,500	382,700	365,400	334,700	292,100
7	99,400	72,300	56,800	60,100	68,200	269,700	395,400	393,300	381,800	364,700	333,500	290,800
8	98,300	71,600	56,400	60,700	68,700	275,000	395,200	393,000	380,800	364,000	331,600	289,500
9	97,400	70,900	55,900	60,800	69,500	280,500	395,200	392,800	379,600	363,300	330,400	288,200
10	96,500	70,200	55,600	61,000	83,000	286,200	395,200	392,800	378,200	362,300	329,200	286,400
11	95,500	69,400	55,200	61,100	92,300	292,300	394,700	392,800	377,000	361,600	328,000	285,100
12	94,500	68,600	54,800	61,100	101,800	297,100	394,500	392,300	375,500	360,600	326,600	283,500
13	93,500	68,300	54,400	61,100	114,900	303,800	394,500	391,800	374,800	359,700	325,400	282,000
14	92,600	67,600	54,000	61,200	125,700	309,300	394,700	391,400	375,300	358,700	324,300	280,700
15	91,600	66,900	53,800	61,300	133,700	314,400	394,700	390,900	375,800	358,000	322,700	279,400
16	90,600	66,500	53,500	61,400	139,600	318,900	394,700	390,600	376,000	357,000	321,500	277,800
17	89,600	66,100	53,000	61,400	150,900	325,400	395,700	390,400	376,200	356,300	320,300	276,300
18	88,800	65,500	52,700	61,500	158,900	331,400	395,200	390,200	375,600	355,600	318,900	275,000
19	87,800	65,000	52,400	61,600	167,900	338,100	395,000	389,900	374,800	354,600	317,400	273,400
20	86,900	64,500	52,000	61,700	174,800	346,000	394,700	389,700	374,300	353,700	316,000	271,900
21	86,100	64,000	51,700	61,700	180,700	354,600	394,700	389,400	373,800	352,500	314,600	270,600
22	85,200	63,300	51,500	61,600	186,300	363,300	395,900	389,200	373,100	351,300	313,200	268,900
23	84,300	62,900	52,400	61,600	191,500	371,200	396,600	389,900	372,900	350,300	312,100	267,600
24	83,500	62,400	52,700	61,600	198,000	379,600	396,400	388,700	372,400	349,100	310,700	266,400
25	82,600	61,900	52,600	61,600	203,100	387,000	395,700	388,500	372,400	348,200	309,300	264,900
26	81,700	61,500	52,500	61,700	208,200	391,800	395,200	388,200	372,200	346,700	308,000	263,600
27	80,800	60,900	52,200	61,900	212,900	393,300	395,000	388,000	371,400	346,600	306,600	262,400
28	79,800	60,600	51,900	62,100	218,900	393,800	394,700	387,800	371,000	345,000	305,400	261,300
29	79,000	60,100	51,700	62,900	-	398,600	394,700	387,500	370,500	343,800	303,800	260,100
30	78,100	59,800	51,500	63,600	-	403,800	394,700	387,000	369,800	342,600	302,700	258,800
31	77,400	-	51,300	64,200	-	401,200	-	386,800	-	341,400	301,000	-

HELMAND RIVER BASIN

8

Arghandab Reservoir near Kandahar, Afghanistan

Contents at 12 p.m., in acre-feet, October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	257,400	226,900	209,500	193,100	180,900	175,400	251,300	234,200	231,000	205,400	168,100	134,400
2	256,100	226,300	209,200	193,100	180,500	175,600	252,300	233,200	230,000	204,100	166,900	133,500
3	254,800	225,500	208,700	192,700	180,000	175,900	252,900	232,400	229,700	202,700	165,500	132,700
4	253,600	224,800	208,100	192,400	179,700	176,100	253,400	231,400	229,000	201,700	164,300	131,700
5	252,300	223,900	207,700	192,100	179,500	176,300	253,200	230,400	228,300	200,600	162,900	130,900
6	251,100	223,400	207,200	191,800	180,700	176,400	252,300	230,200	227,600	199,600	161,800	130,000
7	250,000	222,700	206,700	191,500	181,500	176,400	251,500	230,200	226,900	198,400	160,400	129,000
8	248,800	222,100	206,100	191,100	181,100	176,600	250,800	230,600	226,500	197,400	159,300	128,200
9	247,600	221,300	205,700	190,800	180,700	176,600	250,200	231,400	225,800	196,100	157,900	127,200
10	246,600	220,800	205,200	190,800	180,200	176,700	249,600	231,800	225,300	195,100	156,600	126,400
11	245,600	220,100	204,700	190,300	179,600	177,100	248,800	232,200	224,600	194,200	155,300	125,400
12	244,400	219,600	203,900	190,000	179,100	177,600	248,600	232,400	223,900	192,900	154,100	121,500
13	243,600	218,900	203,400	189,500	178,700	172,000	248,800	232,600	223,100	191,900	152,800	123,400
14	248,400	218,400	202,900	189,100	187,100	185,200	248,800	232,200	222,400	190,700	151,500	122,500
15	241,400	217,800	202,300	188,600	177,500	200,900	248,800	232,000	221,700	189,400	150,400	121,500
16	240,400	217,300	201,900	187,900	177,000	209,900	248,800	231,600	221,000	188,400	149,600	120,600
17	239,600	216,700	201,300	187,400	176,600	215,300	248,600	231,000	220,300	186,800	148,700	119,600
18	238,600	216,200	199,900	187,000	176,000	219,400	248,400	230,400	219,300	185,500	148,000	118,900
19	237,600	215,600	200,300	186,700	175,600	223,300	248,200	230,000	218,600	184,600	147,300	118,300
20	236,800	215,000	199,600	186,200	175,000	225,800	247,600	230,000	217,500	183,300	146,600	117,100
21	236,000	214,400	199,100	185,700	174,500	228,600	246,400	229,300	216,500	182,000	145,700	116,200
22	235,200	214,000	198,400	185,200	174,400	231,400	245,000	229,000	215,500	180,700	144,800	115,400
23	234,400	213,400	197,800	184,900	174,600	233,800	243,800	228,300	214,100	179,500	143,800	114,500
24	233,400	213,000	197,300	184,400	174,700	236,200	242,600	228,600	213,000	178,300	142,900	113,700
25	232,600	212,500	196,800	183,900	174,900	238,400	241,200	229,100	212,000	177,200	141,900	112,800
26	231,600	212,000	196,400	183,500	174,000	240,200	240,000	230,400	210,700	175,800	140,900	111,900
27	230,800	211,400	195,800	183,100	175,100	242,200	238,800	230,800	209,700	174,700	139,900	111,100
28	230,000	211,000	195,200	182,700	175,200	243,800	237,600	231,600	208,700	173,300	138,800	110,300
29	229,300	210,400	194,800	182,200	-	246,400	236,400	231,800	207,400	172,100	137,800	109,500
30	228,400	210,000	194,200	181,700	-	248,200	235,400	231,800	206,400	170,700	136,700	108,800
31	227,700	-	193,600	181,300	-	250,000	-	231,400	-	169,300	135,600	-

HELMAND RIVER BASIN

9

Arghandab River below Arghandab dam, Afghanistan

Location.--Lat. $31^{\circ}50'$ N., long. $65^{\circ}51'$ E., on left bank $3\frac{1}{2}$ kilometers downstream from Arghandab Dam 35 kilometers northeast of Kandahar, 90 kilometers upstream from Dori Rud, 180 kilometers upstream from Helmand River.

Drainage area.--6,870 square miles (from Survey of India maps); 640 square miles believed non-contributing.

Records available.--October 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (from MKA surveys based on Survey of India datum). Dec. 30, 1947, to Dec. 22, 1951, water-stage recorder $2\frac{1}{2}$ kilometers upstream at same datum. Dec. 23, 1951, to Oct. 16, 1952, staff gage and concrete control 3 kilometers upstream at same datum.

Extremes.--Maximum and minimum discharges for the water years 1948-55 are contained in the following table.

Water year	Date	Maximum		Date	Minimum daily	
		Discharge (cfs)	Gage height (meters)*		Discharge (cfs)	Discharge (cfs)
1948	Mar. 11, 1948	12,700	2.71	Sept. 7, 8, 1948	44	
1949	Mar. 11, 1949	a28,000	b3.98	Sept. 5-9, 1949	156	
1950	Jan. 28, 1950	14,700	2.87	Oct. 1, 2, 1949	243	
1951	May 7, 1951	15,300	2.92	Sept. 30, 1951	283	
1952	Feb. 14, 1952	c5,100	-	Aug. 11, 1952	0	
1953	Apr. 16, 1953	1,570	5.58	Oct. 4-6, 1953	280	
1954	Mar. 30, 1954	13,800	7.35	Feb. 28, 1954	403	
1955	Apr. 6, 7, 1955	1,600	5.92	Feb. 6, 1955	84	

* Add 1,050.00 to get elevation above mean sea level.

a From rating curve extended above 15,000 cfs on basis of slope-area determination at peak flow.

b From floodmark.

c From records of MKA.

1947-55: Maximum discharge, 28,000 cfs Mar. 11, 1949, from rating curve extended above 15,000 cfs on basis of slope-area determination at peak flow; no flow Aug. 11, 1952 (regulated); minimum daily prior to regulation, 44 cfs Sept. 7, 8, 1948.

Remarks.--Records good except those above 5,000 cfs and those for periods of no gage-height record, which are fair. Flow regulated since Feb. 24, 1952 by Arghandab dam. No diversions between dam and gage; some local inflow between dam and gage during heavy rains. Entire flow, except spillway overflow in some years and waste during some years to provide flood control, is used to irrigate about 150,000 acres in the Arghandab valley.

HELMAND RIVER BASIN

Arghandab River below Arghandab Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1947 to September 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	191	337	373	428	524	a2,880	2,420	557	389	180	86
2	127	194	337	373	461	524	a2,910	2,270	557	365	172	81
3	129	197	349	373	461	575	a2,940	2,220	539	341	172	76
4	131	200	349	373	444	650	a2,970	2,080	522	317	172	62
5	133	206	1,330	361	413	650	3,000	1,960	522	305	164	51
6	135	212	1,600	373	386	675	2,900	1,860	505	305	164	51
7	137	218	1,030	373	386	4,100	2,800	1,770	489	293	156	44
8	139	224	862	373	413	6,790	3,200	1,640	473	273	156	44
9	141	230	752	373	413	2,900	3,980	1,600	473	263	149	47
10	143	236	675	373	444	3,550	3,700	1,520	458	253	149	59
11	145	242	550	373	444	2,900	3,450	1,480	443	243	149	66
12	147	248	444	373	428	2,420	3,200	1,390	458	243	142	76
13	149	254	399	373	444	2,170	3,050	1,310	522	243	142	81
14	151	260	399	386	444	1,960	2,900	1,240	522	223	135	81
15	153	266	399	386	428	1,840	2,900	1,150	505	a 220	135	91
16	155	272	399	386	428	1,720	2,950	1,080	489	a 220	128	91
17	157	278	399	386	428	1,680	3,000	1,020	458	a 210	128	91
18	159	284	399	386	480	2,170	3,250	990	443	a 210	121	97
19	161	290	399	386	524	2,420	3,600	933	429	a 210	121	103
20	163	296	399	386	550	2,370	3,550	905	415	a 200	121	109
21	165	302	399	386	575	2,470	3,450	825	402	a 200	149	109
22	167	308	399	386	550	2,470	3,300	799	377	a 200	223	109
23	169	314	399	386	524	2,470	3,200	772	365	a 190	253	115
24	171	320	399	386	501	2,510	3,150	747	353	a 190	253	121
25	173	325	399	386	524	2,470	3,100	700	341	a 190	243	135
26	175	325	399	399	575	2,750	3,050	678	329	190	223	156
27	177	325	399	413	600	a3,200	3,000	657	329	188	205	172
28	179	325	399	625	575	a3,500	2,950	636	329	188	164	188
29	182	337	386	461	550	a3,200	2,800	616	353	180	142	188
30	185	337	386	428	-	a3,000	2,600	596	365	180	121	172
31	188	-	373	428	-	a2,900	-	577	-	180	103	-
Total	4,811	8,016	16,144	12,223	13,821	73,528	93,730	38,441	13,322	7,402	5,035	2,950
Mean	155	267	521	394	477	2,372	3,124	1,210	444	239	162	98
Ac-ft	9,540	15,900	32,020	24,240	27,410	145,800	185,900	76,250	26,420	14,680	9,990	5,860

Calendar year 1947: Max 6,790 Min 44 Mean 791 Ac-ft 574,010

Water year 1947-48: Max 6,790 Min 44 Mean 791 Ac-ft 574,010

Peak discharge (base, 8,000 cfs).--Mar. 8 (4 a.m.) 12,700 cfs (2.71 m.).

a No gage-height record; discharge interpolated or computed on basis of rainfall records.

Note.--Water stage recorder installed Dec. 30; occasional staff gage readings only prior to Dec. 30.

Arghandab River below Arghandab Dam, Afghanistan
Discharge, in cubic feet per second, water year October 1948 to September 1949

9

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	164				a 580	640	4,340	3,000		a 430	196	180
2	156				a 1,000	670	4,520	2,800		a 420	196	172
3	149				a 900	670	4,820	2,600		a 410	196	164
4	a 150				a 700	640	4,940	2,500		a 400	196	156
5	a 150				a 650	620	4,940	2,350		389	317	156
6	a 150				a 600	670	4,880	2,200		377	1,680	156
7	a 160				a 580	670	5,420	2,100		365	1,390	156
8	a 160				a 580	825	5,180	2,000		353	933	156
9	a 160				a 580	2,000	5,120	1,900		341	723	156
10	a 170				a 580	al2,000	5,620	1,800		329	577	164
11	a 170				a 580	a15,000	6,440	1,800		317	473	a 170
12	a 170				a 580	a12,000	6,440	1,700		293	389	a 170
13	a 180				a 580	a 8,000	5,420	1,600		293	329	a 170
14	a 180				577	a 7,000	5,180	1,500		283	283	a 175
15	a 180	370	480	550	a 580	a 6,500	4,940	1,400	550	273	253	a 175
16	a 190				a 580	a 6,000	4,760	1,300		273	233	a 175
17	a 190				a 590	a 5,800	4,700	1,200		263	205	a 180
18	a 200				a 590	a 5,600	4,700	1,200		263	188	a 180
19	a 200				a 590	a 5,400	4,520	1,100		253	172	a 180
20	a 210				a 600	a 5,200	4,400	1,100		243	164	a 185
21	a 220				a 600	a 6,000	4,220	1,000		233	156	a 185
22	a 230				a 600	a 5,500	3,980	990		223	156	a 188
23	a 240				a 600	a 5,000	3,650	950		214	156	a 196
24	a 250				a 610	a 4,800	3,600	910		214	156	a 196
25	a 260				a 620	a 4,600	3,550	880		205	164	a 205
26	263				a 620	a 4,500	3,450	860		205	180	a 205
27	a 270				a 630	a 4,400	a 3,350	830		205	205	a 214
28	a 270				636	a 4,300	a 3,300	810		205	214	a 214
29	a 280				-	a 4,300	a 3,200	790		196	214	a 223
30	a 290	458			-	a 4,300	a 3,100	774		196	205	a 233
31	a 290	-			-	a 4,300	-	760	-	196	188	-
Total	6,302	11,188	14,880	17,050	17,513	147,905	136,680	46,704	16,500	8,860	11,087	5,435
Mean	203	373	480	550	625	4,770	4,556	1,507	550	286	358	181
Ac-ft	12,500	22,190	29,510	33,820	34,740	293,400	271,100	92,640	32,730	7,570	21,990	10,780

Calendar year 1948 : Max 6,790 Min 44 Mean 800 Ac-ft 580,750
Water year 1948-49 : Max 15,000 Min 149 Mean 1,206 Ac-ft 872,970

Peak discharge (base, 8,000 cfs).--Mar. 11, about 24,000 cfs (estimated) daily.
a No gage-height record; discharge interpolated.

HELMAND RIVER BASIN

9

Arghandab River below Arghandab Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	243	429	522	522	2,220	1,311	8,500	5,300	2,120	700	377	317
2	243	429	505	539	2,120	1,311	10,200	5,240	1,955	678	415	317
3	253	429	505	522	2,000	1,311	7,780	5,180	1,861	657	429	317
4	253	429	505	505	1,908	1,311	6,860	5,000	1,815	636	443	317
5	263	429	505	505	1,770	1,348	6,230	5,300	1,726	616	429	317
6	263	429	522	505	1,611	1,348	5,740	5,620	1,680	616	473	317
7	273	429	522	505	1,558	1,437	5,420	5,740	1,726	596	473	317
8	273	429	505	522	1,437	1,477	5,300	5,420	1,683	577	489	317
9	273	429	505	522	1,348	1,512	5,180	5,420	1,641	557	522	317
10	283	415	505	522	1,240	1,860	5,180	6,020	1,599	539	522	317
11	283	402	505	522	1,149	2,120	5,240	6,860	1,558	522	505	317
12	273	402	505	522	1,084	1,908	5,360	7,000	1,477	522	473	317
13	283	415	505	522	1,020	2,080	5,480	6,160	1,386	522	443	317
14	293	415	505	522	961	2,170	5,420	5,680	1,311	522	429	317
15	305	415	505	539	990	2,040	5,480	5,300	1,216	678	429	317
16	305	429	505	539	961	1,955	5,480	5,000	1,149	825	415	317
17	305	429	489	539	961	1,861	5,240	4,820	1,084	851	415	317
18	329	429	489	539	990	1,815	5,000	4,640	990	772	402	317
19	341	429	489	539	990	1,955	5,000	4,520	905	723	389	317
20	341	443	489	539	961	2,320	4,820	4,460	905	678	377	317
21	353	443	489	522	961	2,600	4,640	4,220	878	616	377	317
22	365	443	489	489	933	2,900	4,520	3,980	851	557	365	317
23	365	443	489	522	933	3,250	4,400	3,800	825	522	365	317
24	377	458	489	539	933	3,450	4,280	3,600	799	489	353	317
25	389	458	489	539	961	3,400	4,220	3,400	799	473	353	317
26	389	473	489	557	1,020	3,200	4,280	3,200	772	443	341	317
27	402	489	489	3,150	1,084	3,000	4,400	3,100	772	415	341	317
28	402	505	489	11,800	1,240	3,000	4,700	2,800	772	402	341	317
29	402	505	489	9,600	-	3,050	5,120	2,650	747	389	329	317
30	415	522	505	6,230	-	3,100	5,300	2,470	723	389	329	317
31	415	-	505	3,600	-	3,100	-	2,220	-	377	317	-
Total	9,953	13,223	15,498	48,039	35,374	68,500	164,770	144,120	37,725	17,859	12,660	9,510
Mean	321	441	500	1,550	1,263	2,210	5,492	4,649	1,258	576	408	317
Ac-ft	19,740	26,230	30,740	95,280	70,160	135,900	326,800	285,900	74,830	35,420	25,110	18,860

Calendar year 1949 : Max 15,000 Min 156 Mean 1,223 Ac-ft 885,480
 Water year 1949-50 : Max 11,800 Min 243 Mean 1,581 Ac-ft 1,144,970

Peak discharge (base, 8,000 cfs).--Jan. 28 (time unknown) 14,700 cfs (2.87 m.); Apr. 2 (1 a.m.) 12,000 cfs (2.65 m.).

HELMAND RIVER BASIN

9

Arghandab River below Arghandab Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	329	458	657	596	596	933	3,980	5,120	2,700	723	317	317
2	353	473	657	596	596	933	4,700	5,240	42,470	700	317	317
3	365	473	657	596	577	990	4,820	4,880	2,170	700	329	317
4	377	458	657	596	557	1,020	4,220	4,640	2,000	700	329	329
5	377	443	657	596	577	1,051	3,920	5,000	1,770	678	341	317
6	389	473	657	596	596	1,182	3,860	7,040	1,683	657	353	329
7	389	489	678	616	1,410	1,348	4,280	11,100	1,599	636	353	329
8	389	522	678	636	1,560	1,437	4,160	9,650	1,599	636	353	317
9	389	522	678	616	1,275	2,000	3,860	720	1,599	636	353	317
10	389	522	678	700	1,116	1,815	3,750	9,090	1,558	636	341	329
11	377	539	678	878	961	1,599	3,800	5,550	1,477	616	341	341
12	389	539	678	772	878	1,517	4,100	5,480	1,437	616	329	341
13	389	539	678	723	825	1,517	4,460	6,020	1,348	616	329	341
14	389	539	657	678	799	1,517	4,640	5,680	1,311	596	317	341
15	389	557	657	678	772	1,558	4,520	5,120	1,275	577	329	329
16	389	557	657	657	772	2,120	4,460	4,700	1,240	577	353	341
17	389	557	657	636	747	2,220	4,580	4,400	1,084	577	365	329
18	389	557	657	616	723	2,040	4,760	4,280	1,084	557	365	329
19	389	577	657	616	772	1,955	4,640	4,160	1,084	539	377	317
20	389	577	657	616	851	1,815	4,520	4,220	1,051	539	365	305
21	389	577	636	596	878	1,683	4,280	4,160	1,020	a 539	365	305
22	389	577	636	577	851	1,726	4,280	4,040	1,020	a 505	365	293
23	389	577	616	577	851	1,727	4,580	a 3,920	990	a 473	353	293
24	389	577	616	596	851	2,080	4,460	a 3,750	961	a 458	341	293
25	377	577	616	596	878	3,650	4,280	a 3,550	905	a 429	341	293
26	377	577	616	596	878	6,510	4,280	a 3,400	878	a 415	329	293
27	377	596	616	596	905	6,650	4,460	a 3,250	851	a 402	329	305
28	389	596	616	596	905	5,300	4,640	a 3,050	799	a 377	317	293
29	402	616	616	596	-	4,640	4,880	a 2,850	772	a 365	317	293
30	429	657	616	596	-	4,220	5,000	a 2,700	747	a 341	317	283
31	458	-	616	616	-	3,980	-	2,550	-	a 329	317	-
Total	11,989	16,298	20,103	19,552	23,957	72,733	131,170	152,310	40,482	17,145	10,547	9,476
Mean	387	543	648	631	856	2,353	4,372	4,913	1,346	553	340	316
Ac-ft	23,780	32,330	39,870	38,780	47,520	144,300	260,200	302,100	80,290	34,010	20,920	18,800

Calendar year 1950 : Max 11,800 Min 317 Mean 1,608 Ac-ft 1,164,260
 Water year 1950-51 : Max 11,100 Min 283 Mean 1,440 Ac-ft 1,042,900

Peak discharge (base, 8,000 cfs).--Mar. 26 (8:30 p.m.) 8,020 cfs (2.24 m); May 7 (10:40 p.m.) 15,300 cfs (2.92 m.).

a No gage-height record; discharge interpolated.

HELMAND RIVER BASIN

9

Arghandab River below Arghandab Dam, Afghanistan
Discharge, in cubic feet per second, water year October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	293	539	577	650	800	700	1,515	1,725	690	855	750	189
2	317	539	577	650	770	700	830	1,725	765	795	750	189
3	314	522	577	650	750	700	1,570	1,725	930	795	750	304
4	365	505	577	650	770	680	1,570	1,725	960	810	750	392
5	365	505	577	650	750	680	1,585	1,740	1,050	1,065	750	392
6	377	522	577	640	720	710	1,585	1,740	1,050	765	735	379
7	389	522	577	630	720	765	1,600	1,740	975	810	735	366
8	402	522	577	620	720	815	1,600	1,740	915	810	720	366
9	420	522	577	600	720	830	1,615	1,740	930	810	720	366
10	415	522	596	610	750	830	1,630	1,740	930	780	12	366
11	415	522	596	610	750	830	1,630	1,740	1,030	750	0	366
12	429	522	577	630	780	845	1,645	1,400	1,180	750	379	366
13	415	522	596	670	1,000	870	1,645	1,240	1,225	750	509	366
14	429	522	596	800	5,100	900	1,660	1,240	1,225	735	645	366
15	429	522	596	700	2,500	915	1,675	1,240	1,225	735	1,065	366
16	443	522	616	650	1,700	930	1,675	1,015	1,225	735	1,215	366
17	443	522	616	640	1,500	945	1,675	795	1,150	750	1,050	366
18	443	522	616	640	1,400	945	1,675	795	1,030	750	810	366
19	443	539	616	640	1,300	960	1,690	795	1,030	750	870	366
20	458	539	616	640	1,280	975	1,690	795	1,030	750	870	366
21	473	539	636	630	1,250	975	1,690	795	1,030	750	870	366
22	489	539	636	620	1,230	975	1,690	795	1,030	750	870	366
23	489	539	630	600	1,200	975	1,710	795	1,030	750	870	366
24	489	539	630	580	800	990	1,710	795	1,030	750	615	366
25	505	557	640	560	2	990	1,710	795	990	750	825	366
26	522	557	650	570	2	990	1,710	795	855	750	810	366
27	522	577	650	600	160	1,310	1,710	750	815	750	457	366
28	522	577	650	650	700	1,480	1,725	690	780	750	280	366
29	522	577	650	730	700	1,495	1,725	690	780	750	244	316
30	522	577	660	880	-	1,510	1,725	690	840	750	220	292
31	539	-	660	840	-	1,510	-	690	-	750	200	-
Total	13,580	16,053	18,922	20,230	30,824	29,725	48,865	37,120	29,725	23,985	20,346	10,505
Mean	438	535	610	653	1,063	959	1,629	1,197	991	774	656	350
Ac-ft	26,940	31,840	37,530	40,130	61,140	58,960	96,920	73,630	58,960	47,570	40,360	20,840

Calendar year 1951 : Max 11,100 Min 283 Mean 1,441 Ac-ft 1,043,230
Water year 1951-52 : Max 5,100 Min 0 Mean 819 Ac-ft 594,820

Note.—Arghandab reservoir closed and storage begun Feb. 24; regulated flow thereafter.

HELMAND RIVER BASIN

9

Arghandab River below Arghandab Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a 292	492	554	554	1,010	447	1,170	1,250	847	828	809	772
2	292	492	554	554	1,010	447	1,380	1,250	847	828	809	772
3	a 292	492	554	554	1,010	447	1,350	1,250	847	828	809	755
4	a 280	492	554	554	990	447	1,360	1,250	847	828	809	755
5	a 280	492	554	554	1,000	447	1,360	1,250	847	828	790	720
6	a 280	538	554	554	1,000	447	1,510	1,220	847	828	790	702
7	a 292	562	554	554	1,000	447	1,510	1,220	847	828	790	702
8	a 292	562	554	554	1,000	447	1,510	1,220	847	828	790	702
9	a 292	562	554	554	1,080	447	1,300	1,220	847	828	790	702
10	a 292	639	554	554	1,150	454	1,510	1,220	847	828	790	702
11	a 292	554	554	796	1,030	447	1,510	1,220	847	828	790	702
12	a 292	554	554	1,010	1,080	447	1,460	1,220	847	818	790	702
13	a 292	554	554	1,030	1,080	447	1,510	1,170	847	818	790	702
14	a 292	554	554	1,030	1,150	447	1,510	1,150	847	818	790	702
15	a 350	554	554	1,030	852	447	1,510	979	847	809	790	702
16	382	554	554	1,030	432	461	1,570	847	847	809	790	702
17	382	554	554	1,030	432	461	1,510	847	847	809	781	702
18	382	554	554	1,030	432	461	1,510	847	847	809	781	702
19	382	554	554	1,030	432	461	1,400	847	828	809	781	702
20	382	554	554	1,030	432	618	1,460	847	847	809	781	702
21	382	554	554	1,030	425	737	1,300	847	847	809	772	702
22	382	554	554	1,030	432	847	1,360	847	828	809	772	702
23	382	554	554	1,030	432	1,030	1,350	847	828	809	772	702
24	382	554	554	1,030	432	1,030	1,350	847	828	809	772	702
25	382	554	554	1,030	432	1,060	1,350	847	828	809	772	702
26	389	554	554	1,030	432	1,030	1,350	847	828	809	772	685
27	389	554	554	1,020	432	1,030	1,350	847	828	809	772	685
28	389	554	554	1,020	432	1,060	1,320	847	828	809	772	685
29	389	554	554	1,020	-	1,060	1,270	847	828	809	772	685
30	418	554	554	1,020	-	1,030	1,250	847	828	809	772	685
31	492	-	554	1,020	-	1,220	-	847	-	809	772	-
Total	10,688	16,403	17,174	26,866	21,051	20,308	42,160	31,641	25,220	25,315	24,332	21,239
Mean	343	547	554	867	752	655	1,405	1,021	847	817	785	708
Ac-ft	21,200	32,530	34,060	53,290	41,750	40,280	83,620	62,760	50,020	50,210	48,260	42,130

Calendar year 1952 : Max 5,100 Min 0 Mean 808 Ac-ft 586,300
 Water year 1952-53 : Max 1,570 Min 280 Mean 774 Ac-ft 560,110

a No gage-height record; discharge computed from auxiliary gage readings.

HELMAND RIVER BASIN

9

Arghandab River below Arghandab Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	711	676	652	602	554	476	9,300	6,000	1,870	1,150	951	1,000
2	702	676	652	602	546	702	8,400	5,900	1,870	1,160	951	1,000
3	702	676	652	602	530	737	7,700	5,800	1,840	d1,160	951	1,000
4	702	676	652	618	523	755	7,300	5,600	1,830	d1,160	951	1,000
5	702	676	652	694	523	755	7,000	5,500	1,830	d1,160	951	1,000
6	702	676	652	660	523	764	6,800	5,400	1,820	d1,160	951	1,000
7	702	676	652	652	523	764	6,700	5,300	1,820	d1,160	951	1,000
8	702	676	652	652	523	772	6,600	5,200	1,800	d1,160	1,280	1,000
9	694	668	652	644	523	781	6,500	5,150	1,800	d1,160	988	988
10	694	668	652	635	586	781	6,500	5,080	1,790	1,160	988	988
11	694	668	644	626	586	790	6,500	5,020	1,790	1,160	988	988
12	694	668	644	626	602	790	6,300	4,700	1,790	1,160	988	976
13	694	668	644	626	626	790	6,200	4,360	1,710	1,150	988	976
14	694	668	644	626	635	790	6,300	3,980	1,120	1,150	988	976
15	694	668	644	626	635	809	6,300	3,620	1,120	1,150	988	964
16	694	668	644	626	626	1,220	6,300	3,400	1,120	1,150	988	964
17	694	668	644	626	652	1,030	6,800	3,250	1,120	1,150	988	964
18	694	668	635	626	644	1,300	6,600	3,110	1,400	1,150	988	964
19	694	668	635	626	644	1,400	6,400	3,030	1,320	1,140	988	951
20	685	668	635	618	644	1,460	6,300	2,820	1,150	1,140	988	927
21	685	668	635	618	644	1,430	6,300	2,710	1,120	1,140	988	927
22	685	668	635	618	635	1,570	6,900	2,640	1,120	1,140	988	927
23	685	668	635	618	635	1,540	7,500	2,540	1,120	1,120	988	914
24	685	668	626	610	570	1,570	7,600	2,450	1,000	1,120	988	902
25	685	660	626	610	432	1,520	7,000	2,320	805	1,110	988	902
26	685	660	626	610	410	1,590	6,600	2,240	1,150	1,050	988	902
27	685	660	626	610	410	2,220	6,400	2,140	1,150	951	988	780
28	750	660	626	602	403	3,320	6,300	2,070	1,150	951	988	843
29	685	660	626	562	-	6,700	6,300	2,020	1,150	951	988	939
30	676	660	626	546	-	9,610	6,200	1,960	1,150	951	1,000	939
31	676	-	618	546	-	10,600	-	1,900	-	951	1,000	-
Total	21,526	20,056	19,838	19,163	15,787	59,336	203,900	117,210	42,825	34,525	30,685	28,601
Mean	694	669	640	619	564	1,914	6,797	3,781	1,428	1,114	990	953
Ac-ft	42,700	39,780	39,350	38,010	31,310	117,700	404,400	232,500	84,940	68,480	60,860	56,730

Calendar year 1953 : Max 1,570 Min 425 Mean 820 Ac-ft 594,150
 Water year 1953-54 : Max 10,600 Min 403 Mean 1,681 Ac-ft 1,216,760

d Doubtful gage-height record; discharge estimated on basis of recession curve or interpolated.
 Note.--No gage-height record Apr. 2 to May 8; discharge interpolated.

HELMAND RIVER BASIN

9

Arghandab River below Arghandab Dam, Afghanistan

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	939	927	902	902	902	480	854	1,410	866	744	665	621
2	939	927	902	902	902	418	930	1,400	866	744	665	528
3	939	927	902	902	902	410	1,050	1,300	866	744	665	434
4	939	927	902	902	902	410	1,120	1,300	854	744	665	442
5	939	927	902	902	882	410	1,400	1,300	805	744	654	442
6	939	927	902	902	84	401	1,600	1,300	792	710	654	442
7	939	914	902	902	183	401	1,600	1,300	756	688	654	442
8	939	914	902	902	902	401	1,420	1,280	710	688	654	442
9	939	914	902	902	902	401	1,300	1,210	688	688	654	442
10	939	914	902	902	902	401	1,300	1,210	688	676	654	442
11	939	914	902	902	902	401	1,300	1,210	688	676	654	442
12	939	914	902	902	902	401	1,180	1,210	688	676	654	442
13	939	914	902	902	902	418	1,090	1,210	688	676	654	452
14	939	914	902	902	902	410	1,080	1,210	688	676	654	461
15	939	914	902	902	902	410	1,080	1,120	676	676	621	470
16	939	910	902	902	902	426	1,080	1,050	676	676	621	500
17	939	910	902	902	902	434	1,080	1,010	676	665	621	500
18	927	910	902	902	902	442	1,080	976	733	665	621	500
19	927	910	902	902	902	461	1,080	939	780	665	621	500
20	927	910	902	902	902	470	1,280	902	792	665	621	500
21	927	905	902	902	902	490	1,450	866	805	665	621	500
22	927	905	902	902	631	500	1,450	866	805	665	621	500
23	927	905	902	902	519	500	1,450	866	805	665	621	500
24	927	905	902	902	519	500	1,450	890	805	665	621	500
25	927	905	902	902	519	500	1,450	866	805	665	621	500
26	927	902	902	902	519	500	1,450	866	805	665	621	500
27	927	902	902	902	519	500	1,450	866	805	665	621	500
28	927	902	902	902	519	500	1,440	866	780	665	621	500
29	927	902	902	902	-	528	1,440	866	756	665	621	490
30	927	902	902	902	-	722	1,440	866	744	665	621	490
31	927	-	902	902	-	756	-	866	-	665	621	-
Total	28,941	27,373	27,962	27,962	21,130	14,402	38,374	33,397	22,891	21,201	19,757	14,424
Mean	934	912	902	902	754	464	1,279	1,077	763	684	637	480
Ac-ft	57,400	54,290	55,460	55,460	41,910	28,560	76,110	66,240	45,400	42,050	39,190	28,610

Calendar year 1954 : Max 10,600 Min 403 Mean 1,742 Ac-ft 1,262,100
 Water year 1954-55 : Max 1,600 Min 84 Mean 816 Ac-ft 590,680

Note.--No gage-height record Nov. 9-28, Nov. 30, Jan. 2-30; discharge interpolated.

HELMAND RIVER BASIN

10

Arghastan River near Kandahar, Afghanistan

Location.--Lat. $31^{\circ} 26'$ N., long. $65^{\circ} 54'$ E., on upstream side of bridge on Kandahar to Chaman (Pakistan) road, about 22 kilometers upstream from mouth and Dori River, and 28 kilometers southeast of Kandahar.

Drainage area.--12,820 square miles, approximately, of which about 6,200 square miles (above outlet of Lake Ab-i-Istada) considered noncontributing.

Records available.--October 1952 to September 1955; extremes only for water year 1954.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (from MKA surveys based on Survey of India datum). Prior to October 1954, water-stage recorder at present site at datum [redacted] meters higher. about 1,015.7

Extremes.--1952-53: Maximum discharge during year, 11,100 cfs Feb. 14 (gage-height, 1,020.08 meters, present datum; no flow during most of year.

1953-54: Maximum discharge during year, 42,100 cfs Feb. 13 (gage-height, 1,021.09 meters, from floodmark) from slope-area determination of peak flow; no flow during most of year.

1954-55: Maximum discharge during year, [redacted] cfs (gage-height [redacted] meters); no flow during most of year. 2,870 1,019.98

Remarks.--Records are fair. Extensive diversions for irrigation above the station.

HELMAND RIVER BASIN

10

Arghastan River near Kandahar, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				0	0	180						
2				0	0	141						
3				0	277	95						
4				0	1,070	62						
5				0	216	52						
6				0	95	42						
7				0	105	32						
8				0	105	26						
9				0	336	0						
10				0	2,840	0						
11				0	2,320	0						
12				0	3,500	*0						
13				0	3,940	0						
14				26	5,450	0						
15				0	5,510	0						
16				0	3,260	0						
17				0	2,030	0						
18				0	1,320	0						
19				0	933	0						
20				0	738	0						
21				0	604	0						
22				0	520	0						
23				0	498	0						
24				0	309	0						
25				0	336	0						
26				0	292	0						
27				0	243	0						
28				0	207	0						
29				*0	0	-						
30				0	-	0						
31				0	-	0						
Total	0	0	0	26	37,052	630	0	0	0	0	0	0
Mean	0	0	0	0.8	1,323	20.3	0	0	0	0	0	0
Ac-ft	0	0	0	52	73,490	1,250	0	0	0	0	0	0

Calendar year 1952: Max - Min - Mean - Ac-ft -
 Water year 1952-53: Max 5,510 Min 0 Mean 103 Ac-ft 74,792

* Observation of no flow made on this day.

Arghastan River near Kandahar, Afghanistan

10

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				0	42	0	0	0				
2				0	35	0		0				
3				0	35	0		0				
4				0	35	0		0				
5				0	31	0		0				
6				0	23	0		0				
7				0	19	*0		0				
8				0	15	0		0				
9				0	6	0		0				
10				0	0	0		0				
11				0	0	0		0				
12				0	0	0		0				
13				0	0	*0		0				
14				0	0	0		0				
15				0	0	315		0				
16				0	0	2,470		0				
17				0	0	1,650		0				
18				0	0	918		0				
19				0	0	550		0				
20				*0	0	352		0				
21				0	0	223		0				
22				0	0	143		0				
23				0	0	106		0				
24				0	0	79		16				
25				0	0	52		0				
26				0	0	27		0				
27				0	0	15		0				
28				19	0	0		0				
29				63	-	0		0				
30				88	-	0		0				
31				63	-	0		0				
Total	0	0	0	233	241	6,900	0	16	0	0	0	0
Mean	0	0	0	7.52	8.6	223	0	.5	0	0	0	0
Ac-ft	0	0	0	462	478	13,690	0	32	0	0	0	0

Calendar year 1954: Max - 2,470 Min - 0 Mean - 20.2 Ac-ft 14,662
 Water year 1954-55: Max 2,470 Min 0 Mean - 20.2 Ac-ft 14,662

* Observation of no flow made on this day.

HELMAND RIVER BASIN

11

Arghandab River near Kala Bist, Afghanistan

Location.--Lat. $31^{\circ} 30'$ N., long. $61^{\circ} 20'$ E., on right bank 3 kilometers northeast of ancient fort of Kala Bist, 6 kilometers upstream from mouth, 8 kilometers southeast of Lashkari Bazaar and about 185 kilometers downstream from Arghandab dam.

Drainage area.--31,600 square miles, approximately, includes that of Ab-i-Istada (about 640 square miles non-contributing).

Records available.--October 1947 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 620 meters from survey of India map.

Extremes.--Maximum and minimum discharges for the water years 1948-55 are contained in the following table.

Water year	Date	Maximum		Discharge (cfs)	Gage height (meters)	Minimum	
		Discharge (cfs)	Gage height (meters)			Discharge (cfs)	do
1948	-	a	-			No flow for many days	
1949	-	a	-			do	
1950	Jan. 30, 1950	b60,000	c3.80			do	
1951	Mar. 28, 1951	9,660	1.54			do	
1952	Feb. 16, 1952	2,010	.97			do	
1953	Feb. 16, 1953	18,700	2.11			do	
1954	Feb. 14, 1954	b44,400	3.30			do	
1955	Jan. 31, 1955	991	.63			do	

a Not determined.

b From rating curve extended above 10,000 cfs on basis of slope-area determination of peak flow.

c From floodmark.

1950-55: Maximum discharge, 60,000 cfs Jan. 30, 1950 (gage height, 3.80 meters from floodmark), from rating curve extended above 10,000 cfs on basis of slope-area determination of peak flow; no flow for many days each year.

Remarks.--Records for 1947-48, 1949-51 fair except those for estimated periods of 1948; Jan. 29 to Mar. 27, 1950; and Feb. and Mar. 1951, which are poor. Records for 1948-49 and 1951-52 poor. Records for 1948-49 and 1951-52 poor. Records for 1952-55 good except those for periods of no gage-height record, which are fair to poor. Flow regulated since Feb. 24, 1952 by Arghandab dam.

HELMAND RIVER BASIN

11

Arghandab River near Kala Bist, Afghanistan

Discharge, in cubic feet per second, water year October 1947 to September 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					0	0	1,720	1,580				
2					0	0	1,720	1,450				
3					0	0	1,730	1,290				
4					0	0	1,770	1,160				
5					0	80	1,800	1,120				
6					0	100	1,800	1,050				
7					0	120	1,620	990				
8					0	2,650	1,450	970				
9					0	4,500	1,450	870				
10					0	1,750	1,580	830				
11					0	2,220	1,780	780				
12					0	1,750	1,900	730				
13					0	1,400	2,000	680				
14					0	1,200	2,050	630				
15					0	1,050	2,110	580				
16					0	980	2,170	530				
17					0	900	2,310	490				
18					0	1,250	2,480	450				
19					0	1,200	2,460	410				
20					0	1,400	2,460	370				
21					0	1,350	2,550	330				
22					0	1,430	2,460	290				
23					0	1,430	2,460	250				
24					60	1,430	2,310	210				
25					120	1,470	2,170	170				
26					70	1,430	2,000	140				
27					40	1,650	1,900	110				
28					20	1,660	1,780	50				
29					10	1,680	1,670	40				
30					-	1,690	1,620	30				
31					-	1,700	-	20				
Total	0	0	0	0	320	39,470	59,280	18,600	0	0	0	0
Mean	0	0	0	0	110	1,273	1,976	600	0	0	0	0
Ac-ft	0	0	0	0	635	78,290	117,600	36,890	0	0	0	0

Calendar year 1947 : Max - Min - Mean - Ac-ft -
 Water year 1947-48 : Max 4,500 Min 0 Mean 322 Ac-ft 233,400

Note.--No gage-height Mar. 5-17, Mar. 19 to Apr. 6, May 5-31; discharge obtained by correlation with records for Arghandab River at damsite.

HELMAND RIVER BASIN

11

Arghandab River near Kala Bist, Afghanistan

Discharge, in cubic feet per second, water year October 1948 to September 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					0						0	
2					0						0	
3					0						0	
4					0						0	
5					0						0	
6					0						120	
7					0						120	
8					0						120	
9					0						120	
10					433						120	
11					375						0	
12					280						0	
13											0	
14											0	
15											0	
16											0	
17											0	
18											0	
19							2,977				0	
20											0	
21											0	
22											0	
23											0	
24											0	
25											0	
26								129			0	
27											0	
28											0	
29											0	
30											0	
31											0	
Total	-	-	-	-	-	-	-	-	-	-	-	-
Mean	0	0	0	0	Est. 400	Est. 1,000	Est. 2,000	Est. 200	0	0	20	0
Ac-ft	0	0	0	0	22,210	61,490	119,000	12,300	0	0	1,230	0

Calendar year 1948 : Max - Min - Mean - Ac-ft 233,400

Water year 1948-49 : Max - Min - Mean - Ac-ft 216,200

Note.--No gage-height record Feb. 13 to Apr. 18, Apr. 20 to May 25, May 27-30; mean monthly discharges estimated. Mean daily discharges were not determined.

HELMAND RIVER BASIN

11

Arghandab River near Kala Bist, Afghanistan

Discharge, in cubic feet per second, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				0	3,300	3,800	7,390	3,770	1,150	100		
2				0	3,200	3,800	11,200	3,860	1,020	90		
3				0	3,100	4,000	18,700	3,860	954	80		
4				0	3,100	4,000	15,100	3,860	920	60		
5				0	3,100	4,100	12,400	3,860	859	50		
6				0	3,100	4,200	11,000	3,860	828	30		
7				0	3,100	4,200	9,240	3,860	768	20		
8				0	3,000	4,400	8,420	4,140	706	10		
9				0	3,000	4,500	7,630	4,620	676	0		
10				0	2,600	4,600	7,030	4,930	646	0		
11				0	2,600	4,900	6,140	5,030	615	0		
12				0	2,600	5,000	6,110	5,140	587	0		
13				0	2,600	5,500	6,220	5,140	559	0		
14				0	2,600	6,000	5,670	5,450	530	0		
15				0	2,600	9,200	5,560	5,780	500	0		
16				0	2,600	6,600	5,450	5,560	460	0		
17				0	2,600	5,700	5,450	5,250	430	0		
18				0	2,600	5,100	5,450	4,510	400	0		
19				0	2,600	4,600	5,350	4,050	380	0		
20				0	2,600	4,500	5,140	3,770	350	0		
21				0	2,600	4,600	5,030	3,500	330	0		
22				0	2,600	4,800	4,510	2,940	300	0		
23				0	2,600	5,600	4,320	2,640	280	0		
24				0	2,900	6,000	4,140	2,280	260	0		
25				0	3,000	9,700	4,050	1,960	240	0		
26				0	3,300	9,100	4,050	1,820	220	0		
27				0	3,500	6,800	3,860	1,590	200	0		
28				0	3,800	4,720	3,860	1,480	180	0		
29			300	-	5,030	3,770	1,370	160	0			
30			19,000	-	5,890	3,770	1,260	130	0			
31			21,000	-	7,150	-	1,220	-	0			
Total	0	0	0	40,300	77,800	168,290	206,310	112,350	15,638	450	0	0
Mean	0	0	0	1,300	2,779	5,129	6,877	3,624	521	14.5	0	0
Ac-ft	0	0	0	79,930	154,300	333,800	409,200	222,800	31,020	893	0	0

Calendar year 1949 : Max - Min 0 Mean - Ac-ft 216,200
 Water year 1949-50 : Max 21,000 Min 0 Mean 1,702 Ac-ft 1,232,000

Peak discharge (base, 12,000 cfs).--Jan. 30 (time unknown) 60,000 cfs (3.80 m.); Mar. (date unknown) 17,300 cfs (2.03 m.); Apr. 3 (2 a.m.) 19,600 cfs (2.16 m.).

Note.--Doubtful or no gage-height record Jan. 29 to Mar. 27; June 14 to July 8; discharge estimated on basis of records for station above and below.

Arghandab River near Kala Bist, Afghanistan

Discharge, in cubic feet per second, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					0	272	4,830	a2,700	1,120	59		
2					0	297	4,720	a2,800	1,020	39		
3					0	346	4,620	2,780	1,020	24		
4					0	346	4,510	2,640	954	24		
5					0	475	4,620	2,700	a 880	a 20		
6					0	987	4,320	3,590	a 800	a 20		
7					0	1,190	3,770	5,890	a 730	a 10		
8					0	1,050	3,500	7,390	a 655	a 10		
9					2	646	3,500	6,440	a 575	a 10		
10					3	449	3,340	4,830	a 520	a 10		
11					10	449	3,020	3,770	a 460	a 5		
12					15	449	2,940	2,940	372	a 2		
13					19	449	2,940	2,280	372	0		
14					29	449	2,940	2,050	372	0		
15					39	449	2,780	1,820	346	0		
16					39	503	2,780	1,520	321	0		
17					59	516	2,780	1,400	297	0		
18					69	859	2,780	1,290	272	0		
19					79	1,190	2,640	1,260	223	0		
20					91	1,590	2,780	1,260	190	0		
21					116	1,720	2,640	1,260	190	0		
22					116	1,720	2,640	1,260	174	0		
23					141	1,720	2,520	1,260	157	0		
24					157	1,860	2,460	1,260	141	0		
25					174	1,860	2,460	1,190	129	0		
26					207	2,050	2,460	1,190	91	0		
27					207	3,770	2,520	1,150	79	0		
28					248	8,290	a2,500	1,150	79	0		
29					-	9,380	a2,600	1,150	79	0		
30					-	8,020	a2,700	1,150	59	0		
31					-	6,550	-	1,120	-	0		
Total	0	0	0	0	1,820	60,000	95,610	74,490	12,677	233	0	0
Mean	0	0	0	0	65.0	1,935	3,187	2,403	423	7.52	0	0
Ac-ft	0	0	0	0	3,610	119,000	189,600	147,700	25,140	462	0	0

Calendar year 1950 : Max 21,000 Min 0 Mean 1,702 Ac-ft 1,232,000
 Water year 1950-51 : Max 9,380 Min 0 Mean 671 Ac-ft 485,500

Peak discharge (base, 12,000 cfs).--No peak above base.

a No gage-height record; discharge interpolated.

Note.--Discharge for period Feb. 8 to Mar. 19 computed from graph based on information from watchman.

HELMAND RIVER BASIN

11

Arghandab River near Kala Bist, Afghanistan

Discharge, in cubic feet per second, water year October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				0	0	372	676	297	0			
2				0	0	372	646	297	0			
3				0	0	372	646	297	0			
4				0	0	372	615	297	0			
5				0	0	372	587	297	0			
6				0	0	372	559	297	0			
7				0	0	372	559	297	0			
8				0	0	316	531	297	0			
9				0	0	321	531	297	0			
10				0	0	297	531	297	0			
11				0	0	248	531	272	0			
12				0	0	223	503	272	0			
13				0	0	190	449	272	0			
14				0	2	248	449	272	0			
15				0	372	475	423	248	a2			
16				0	1,770	587	398	248	a5			
17				0	1,590	615	372	223	a5			
18				0	1,480	676	372	223	a5			
19				0	1,400	706	346	207	2			
20				0	1,370	737	316	190	0			
21				0	1,290	737	346	190	0			
22				0	1,190	768	346	116	0			
23				0	1,120	768	346	69	0			
24				0	1,090	768	321	15	0			
25				0	1,050	798	321	0	0			
26				0	987	768	321	0	0			
27				0	768	768	321	0	0			
28				0	615	768	297	0	0			
29				0	449	737	297	0	0			
30				0	-	706	297	0	0			
31				0	-	706	-	0	-			
Total	0	0	0	0	16,543	16,565	13,283	5,777	19	0	0	0
Mean	0	0	0	0	570	534	443	186	.63	0	0	0
Ac-ft	0	0	0	0	32,810	32,860	26,350	11,460	38	0	0	0

Calendar year 1951 : Max 9,380 Min 0 Mean 671 Ac-ft 485,500
 Water year 1951-52 : Max 1,770 Min 0 Mean 143 Ac-ft 103,500

Peak discharge (base, 12,000 cfs).--No peak above base.

a No gage-height record; discharge estimated or computed on basis of recorded range in stage.

HELMAND RIVER BASIN

11

Arghandab River near Kala Bist, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				0	503	200	100	69	0			
2				0	503	170	100	69	2			
3				0	503	130	100	64	0			
4				0	503	100	110	59	0			
5				0	503	80	130	54	0			
6				0	859	60	140	59	0			
7				0	646	50	140	54	197			
8				0	559	40	140	51	141			
9				0	630	30	140	49	98			
10				0	1,050	20	140	44	69			
11				0	8,370	10	140	39	49			
12				0	8,200	5	141	39	34			
13				0	6,010	0	157	34	24			
14				0	12,400	0	182	39	19			
15				70	13,000	0	174	29	15			
16				372	12,600	0	190	29	12			
17				423	8,000	0	174	26	10			
18				423	5,000	0	166	24	8			
19				475	3,000	0	157	22	3			
20				475	81,890	0	141	17	24			
21				475	1,000	0	129	10	39			
22				503	700	0	135	10	34			
23				503	550	0	129	10	24			
24				503	450	0	110	8	19			
25				503	350	0	110	8	8			
26				531	300	30	116	5	5			
27				531	250	60	104	4	2			
28				531	230	100	98	3	1			
29				503	-	100	91	2	0			
30				503	-	100	79	0	0			
31				503	-	100	-	1	-			
Total	0	0	0	7,827	88,559	1,385	3,963	924	835	0	0	0
Mean	0	0	0	252	3,163	44.7	132	29.8	27.8	0	0	0
Ac-ft	0	0	0	15,520	175,700	2,740	7,860	1,830	1,660	0	0	0

Calendar year 1952 : Max 1,770 Min 0 Mean 143 Ac-ft 103,500
 Water year 1951-52 : Max 13,000 Min 0 Mean 284 Ac-ft 205,300

Peak discharge (base, 12,000 cfs.)--Feb. 11 (6:30 p.m.) 16,300 cfs (1.97 m.); Feb. 16 (5 a.m.) 18,700 cfs (2.11 m.).

Note.--No gage-height record Feb. 17-19, Feb. 21 to Apr. 11; Discharge computed on basis of records for station below Arghandab dam and weather records.

g Staff gage reading.

Arghandab River near Kala Bist, Afghanistan
Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	49	260	859	3,000	19,000	5,240	1,350	248	116	98
2		0	54	215	920	3,500	13,000	5,080	1,300	207	92	104
3		0	49	198	768	6,000	10,500	5,030	1,300	207	98	104
4		5	79	215	691	10,000	8,830	5,030	1,300	207	98	104
5		5	49	813	615	8,000	7,750	4,930	1,200	190	98	110
6		8	49	4,830	615	5,000	7,450	4,930	1,200	190	98	98
7		10	49	7,030	503	4,000	6,910	4,830	1,200	190	91	104
8		10	49	4,620	462	3,300	6,220	4,830	1,150	190	85	98
9		12	54	3,860	449	2,900	5,890	4,800	1,150	190	74	122
10		15	69	2,640	475	2,600	5,670	4,800	1,150	190	91	129
11		17	69	1,630	1,920	2,400	5,450	4,700	1,100	190	182	129
12		19	64	1,150	12,100	2,200	5,350	4,600	1,100	190	182	116
13		19	74	954	28,600	2,100	5,240	4,400	1,100	190	157	129
14		22	74	828	12,100	2,000	5,240	4,000	1,040	190	119	135
15		22	69	737	30,000	1,900	5,190	3,600	1,000	190	149	157
16		22	69	676	20,000	1,800	5,140	3,400	980	248	129	141
17		24	74	676	12,000	1,800	5,140	3,200	640	297	129	135
18		24	85	706	8,000	1,800	5,140	3,000	610	272	135	141
19		24	85	706	6,000	1,700	5,190	2,800	600	248	129	157
20		24	79	676	5,000	1,700	5,240	2,600	600	207	129	157
21		24	79	661	4,500	1,700	5,240	2,400	640	174	122	174
22		24	85	587	4,000	1,700	5,240	2,200	600	157	116	174
23		29	104	531	3,600	1,700	5,450	2,110	500	141	110	157
24		26	122	475	3,400	1,700	5,670	2,000	500	157	104	166
25		24	119	436	3,200	1,800	6,380	1,900	500	157	98	157
26		26	340	423	3,000	2,000	6,850	1,850	500	141	98	174
27		24	531	398	3,000	2,400	6,550	1,800	300	129	98	150
28		26	545	372	3,000	2,980	6,110	1,700	250	129	91	140
29		44	462	449	-	4,180	5,560	1,600	250	116	91	140
30		44	346	960	-	7,300	5,240	1,500	250	116	91	140
31		-	309	963	-	17,600	-	1,400	-	116	91	-
Total	0	573	4,364	39,675	199,777	112,760	201,830	106,260	25,360	5,764	3,521	4,010
Mean	0	19.1	114	1,280	7,135	3,636	6,728	3,428	845	186	114	135
Ac-ft	0	1,140	8,660	78,690	396,300	223,700	400,300	210,800	50,300	11,430	6,980	8,010

Calendar year 1953 : Max 13,000 Min 0 Mean 297 Ac-ft 215,100
Water year 1953-54 : Max 42,100 Min 0 Mean 1,929 Ac-ft 1,396,000

Peak discharge (base, 12,000 cfs).--Feb. 14 (8 a.m.) 44,400 cfs (3.30 m.); Mar. 31 (5 p.m.) 24,200 cfs (2.61 m.).

Note.--No gage-height record Feb. 15 to Mar. 27, May 9 to June 30, Sept. 27-30; discharge estimated on basis of records below Arghandab dam and weather records.

HELMAND RIVER BASIN

11

Arghandab River near Kala Bist, Afghanistan

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	140	250	340	472	812	283	19	4	27	1		
2	140	250	340	485	795	274	19	3	19	1		
3	150	250	350	605	812	265	13	3	16	1		
4	150	250	350	761	795	234	13	3	16	1		
5	150	250	350	778	761	192	12	3	16	1		
6	160	260	360	863	710	160	12	4	19	1		
7	160	260	360	898	665	134	10	99	19	1		
8	160	260	370	846	472	99	10	106	19	1		
9	172	270	375	829	365	78	10	192	16	1		
10	178	270	385	829	405	70	11	166	16	1		(*)
11	172	270	415	829	460	61	30	128	16	1		
12	185	280	425	812	460	48	24	112	16	1		
13	185	280	425	795	472	54	19	104	13	1		
14	185	290	425	778	472	300	11	82	13	0		
15	185	290	448	778	448	192	11	70	12	0		
16	199	300	460	761	448	86	9	67	11	0		
17	206	300	472	744	498	61	9	61	11	0		
18	220	300	485	727	535	778	6	58	9	0		
19	220	310	472	727	522	650	6	51	8	0		
20	220	310	460	778	510	460	6	44	4	0		
21	220	310	460	812	510	309	6	41	2	0		
22	234	320	460	812	485	227	6	54	2	0		
23	234	320	460	795	498	160	6	67	2	0		
24	248	320	460	795	460	116	6	61	2	0		
25	250	330	472	778	415	91	6	48	2	0		
26	250	330	472	795	375	67	5	44	2	0		
27	250	335	472	795	318	48	5	41	2	0		
28	250	335	472	795	300	38	5	44	2	0		
29	250	335	460	812	-	30	4	38	2	0		
30	250	335	460	829	-	22	4	32	2	0		
31	250	-	460	936	-	22	-	30	-	0		
Total	6,223	8,770	13,175	24,049	14,779	5,447	313	1,914	314	13	0	0
Mean	201	292	425	775	528	176	10	62	11	4	0	0
Ac-ft	12,340	17,400	26,130	47,640	29,310	10,800	620	3,800	626	25	0	0

Calendar year 1954 : Max 42,100 Min 74 Mean 1,992 Ac-ft 1,442,380
 Water year 1954-55 : Max 936 Min 0 Mean 205 Ac-ft 148,691

* Discharge measurement or observation of no flow made on this day.

Note.—No gage-height record Oct. 1-8, Oct. 25 to Nov. 26, Nov. 28 to Dec. 8, June 24 to July 5; discharge estimated on basis of records below Arghandab dam or interpolated.

HELMAND RIVER BASIN

12

Helmand River at Chahar Burjak, Afghanistan

Location.--Lat. $30^{\circ}15'$ N., long. $62^{\circ}00'$ E., on right bank 1 $1/4$ kilometers downstream from Chahar Burjak, about 80 kilometers from Rud-i-Seistan and Iran boundary, and about 320 kilometers downstream from Arghandab River.

Drainage area.--72,100 square miles approximately (23,000 square miles considered noncontributing).

Records available.--October 1946 to September 1948, (monthly discharge only), October 1948 to September 1954, (monthly discharge only October 1951 to April 1952, July to September 1952, February, March 1954)

Gage.--Water-stage recorder. Altitude of gage 500 meters, approximately.

Extremes.--Maximum and minimum discharges for the water years 1949-54 are contained in the following table:

Water year	Date	Maximum		Minimum	
		Discharge (cfs)*	Gage height (meters)	Date	Discharge (cfs)
1949	Mar. 15, 1949	80,000	412.23	Oct. 1, 1948	b510
1950	Feb. 2, 1950	57,300	411.30	(c)	760
1951	May 12, 1951	456,000	--	Oct. 1, 1950	b880
1952		(e)			(e)
1953	Feb. 18, 1953	410,000	--	Oct. 1-8, 1952	b1,000
1954		(e)	--	Dec. 11, 1953	b740

* From rating curve extended above 30,000 cfs in basis of velocity area studies.

a From floodmarks.

b Minimum daily discharge

c Occurred Oct. 1, 2, 7-9, 1949,

d Maximum daily discharge

e Not determined.

A discharge of 91,500 cfs in 1903 and a discharge in excess of 600,000 cfs in 1885 were computed by slope-area method in the lower Helmand River by a British river commission in 1903-05.

Remarks.--Records good except those for water years 1950, 1952, which are fair, and those for periods of no gage-height record, which are poor. Discharge partly regulated by Kajakai Reservoir on Helmand River and Arghandab Reservoir on Arghandab River except during periods of spillway overflows; also by extensive irrigation throughout the river basin.

HELMAND RIVER BASIN

12

Helmand River at Chahar Burjak, Afghanistan

Monthly discharge, water year October 1946 to September 1947

Month	Cubic feet per second	Runoff in ac-ft
October.....	610	37,500
November.....	840	50,000
December.....	1,160	71,300
Calendar year		
January.....	1,500	92,000
February.....	3,500	194,000
March.....	6,800	418,000
April.....	8,900	530,000
May.....	5,210	320,000
June.....	1,570	93,300
July.....	250	15,400
August.....	5	300
September.....	25	1,500
Water year 1946-47.....	2,520	1,823,300

Note.--Discharge estimated on basis of streamflow data collected at upstream sites.

Monthly discharge, water year October 1947 to September 1948

Month	Cubic feet per second	Runoff in ac-ft
October.....	410	25,200
November.....	680	40,500
December.....	1,010	62,000
Calendar year 1947.....	2,480	1,792,200
January.....	1,300	80,000
February.....	2,700	150,000
March.....	11,800	725,000
April.....	24,500	1,458,000
May.....	13,600	835,000
June.....	3,620	216,000
July.....	900	55,300
August.....	500	30,800
September.....	400	23,800
Water year 1947-48.....	5,110	3,701,600

Note.--Discharge estimated on basis of streamflow data collected at upstream sites.

Helmand River at Chahar Burjak, Afghanistan

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Discharge, in cubic feet per second, water year October 1948 to September 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	510	780	1,100	1,500	2,180	4,910	15,000	28,860	8,390	2,960	1,060	760
2	520	790	1,100	1,600	2,130	4,450	18,000	27,920	8,040	2,850	1,040	760
3	520	800	1,100	1,500	2,180	3,960	21,000	27,020	7,780	2,740	1,040	744
4	530	810	1,100	1,400	6,400	3,760	22,000	26,120	7,530	2,630	1,040	728
5	540	820	1,100	1,550	10,300	3,690	27,000	25,220	7,280	2,530	1,040	712
6	540	830	1,100	1,700	7,700	3,560	31,000	24,330	7,040	2,420	1,040	712
7	550	840	1,100	1,800	6,440	3,440	30,000	23,480	6,800	2,320	994	696
8	550	850	1,100	1,700	5,650	3,560	32,000	22,630	6,560	2,220	928	712
9	560	860	1,100	1,600	5,320	3,690	32,000	21,780	6,340	2,120	928	696
10	560	870	1,100	1,600	4,760	3,820	32,000	20,940	6,110	2,080	906	696
11	570	880	1,100	1,550	4,170	3,960	31,000	20,140	5,880	2,040	884	696
12	580	890	1,100	1,550	3,690	6,710	32,000	19,390	5,660	1,990	928	712
13	580	900	1,150	1,500	3,500	28,670	32,000	18,590	5,450	1,940	1,350	712
14	590	920	1,150	1,440	3,440	42,530	45,000	17,750	5,230	1,900	1,320	712
15	600	930	1,150	1,250	3,320	80,000	74,600	17,000	5,020	1,860	1,230	728
16	600	950	1,200	1,290	3,260	70,000	70,600	16,260	4,820	1,810	1,090	728
17	610	970	1,200	1,320	3,260	50,000	55,000	15,560	4,680	1,760	994	696
18	620	990	1,200	1,290	3,320	30,000	46,000	14,820	4,550	1,720	906	696
19	630	1,000	1,200	1,400	3,200	20,000	44,000	14,220	4,420	1,680	840	712
20	640	1,000	1,200	1,470	3,140	14,000	41,000	13,580	4,290	1,650	808	680
21	650	1,000	1,200	1,470	3,080	12,000	38,000	12,980	4,160	1,570	808	728
22	660	1,000	1,200	1,550	3,080	11,500	36,000	12,380	4,030	1,540	792	744
23	670	1,000	1,200	1,620	3,020	11,000	35,000	11,780	3,900	1,500	792	728
24	680	1,000	1,200	1,620	3,020	11,500	34,000	11,190	3,780	1,460	760	728
25	700	1,000	1,200	1,700	3,080	11,500	34,000	10,640	3,660	1,320	760	744
26	710	1,050	1,200	1,790	3,440	11,500	34,000	10,100	3,540	1,290	766	712
27	720	1,050	1,200	1,910	5,060	12,000	36,000	10,640	3,420	1,230	776	728
28	730	1,050	1,200	1,960	5,480	13,000	40,000	10,100	3,300	1,180	776	776
29	740	1,050	1,250	2,220	-	16,000	30,810	9,610	3,180	1,150	760	776
30	760	1,050	1,300	2,270	-	15,000	29,810	9,130	3,070	1,120	760	760
31	770	1,000	1,400	2,180	-	15,000	-	8,760	-	1,040	744	-
Total	19,192	27,930	36,200	50,300	116,620	526,010	1,081,820	532,870	157,910	57,620	28,854	21,712
Mean	61.9	931	1,168	1,623	4,165	16,970	36,060	17,190	5,264	1,859	931	724
Ac-ft	38,060	55,400	71,800	99,770	231,300	1,043,000	2,146,000	1,057,000	313,200	114,300	57,230	43,660

Calendar year 1948: Max - Mean - Ac-ft ---
 Water year 1948-49: Max 80,000 Min 510 Mean 7,280 Ac-ft 5,270,120

Note.--No gage-height record Oct. 1 to Jan 13; Mar. 15 to Apr. 14, Apr. 16-28; discharge for period Apr. 30 to July 23 is computed on basis of estimated gage-heights during recession. Gage heights for Mar. 15 and Apr. 15 are from floodmark.

HELMAND RIVER BASIN

12

Helmand River at Chahar Burjak, Afghanistan

Discharge, in cubic feet per second, water year October 1949 to September 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	760	950	1,180	1,320	21,100	4,700	9,800	18,060	20,000	4,600	1,580	880
2	760	972	1,230	1,290	55,000	5,000	10,000	19,820	19,500	4,400	1,580	880
3	776	994	1,320	1,320	28,290	5,400	11,000	21,610	18,500	4,200	1,510	860
4	792	994	1,320	1,350	6,680	5,800	14,000	22,800	18,000	4,000	1,470	840
5	808	1,020	1,320	1,420	5,520	6,400	26,000	23,990	17,000	3,800	1,440	820
6	776	1,020	1,290	1,460	5,300	6,800	40,000	24,330	16,000	3,600	1,400	800
7	760	1,020	1,320	1,420	5,160	7,000	28,000	25,040	15,500	3,400	1,360	800
8	760	1,040	1,290	1,420	5,020	7,000	22,000	27,020	14,500	3,200	1,360	800
9	760	1,040	1,260	1,350	5,020	6,500	19,000	26,180	14,000	3,100	1,320	800
10	776	1,040	1,230	1,290	6,340	6,300	17,000	31,000	13,500	3,000	1,290	800
11	840	1,060	1,260	1,260	6,600	6,200	16,000	35,000	13,000	2,900	1,220	800
12	840	1,060	1,260	1,260	7,000	6,400	16,000	33,000	12,000	2,760	1,190	800
13	840	1,060	1,290	1,290	6,800	6,900	16,000	31,000	11,500	2,760	1,130	800
14	884	1,120	1,390	1,390	6,000	7,700	18,000	34,000	11,000	2,710	1,100	780
15	884	1,150	1,420	1,500	5,300	9,500	20,000	39,000	10,500	2,600	1,080	780
16	884	1,150	1,500	1,540	5,000	11,500	23,000	41,480	9,800	2,500	1,050	780
17	884	1,180	1,500	1,570	4,800	10,500	26,000	39,000	9,400	2,410	989	800
18	862	1,090	1,460	1,610	4,700	9,500	30,000	37,000	9,000	2,320	960	800
19	884	1,090	1,420	1,610	4,600	9,000	27,000	36,000	8,500	2,320	960	800
20	840	1,090	1,420	1,570	4,500	8,600	24,000	35,000	8,000	2,270	989	800
21	862	1,090	1,460	1,540	4,400	8,400	20,300	36,000	7,600	2,220	989	800
22	840	1,090	1,420	1,570	4,300	8,400	19,820	35,000	7,200	2,130	989	800
23	840	1,120	1,390	1,570	4,300	8,600	18,700	34,000	6,800	2,040	989	800
24	862	1,120	1,390	1,610	4,300	11,000	17,450	32,000	6,500	2,040	960	800
25	884	1,120	1,350	1,540	4,300	13,000	17,000	30,000	6,200	1,960	960	800
26	884	1,150	1,390	1,570	4,300	17,000	16,120	28,000	5,800	1,910	960	800
27	906	1,180	1,460	1,610	4,400	14,000	15,560	26,000	5,500	1,910	960	800
28	906	1,230	1,420	1,500	4,500	12,000	15,110	25,000	5,200	1,870	940	820
29	994	1,200	1,390	1,540	-	11,000	15,420	23,000	5,000	1,830	940	820
30	950	1,200	1,390	1,570	-	10,000	16,260	22,000	4,800	1,750	920	840
31	928	-	1,350	1,610	-	9,800	-	21,000	-	1,700	900	-
Total	26,226	32,610	42,090	45,470	233,490	269,900	586,570	914,630	329,800	84,210	35,485	24,300
Mean	846	1,088	1,358	1,467	8,339	8,706	19,550	29,500	10,990	2,716	1,145	810
Ac-ft	52,020	64,710	83,480	90,190	463,100	535,300	1,163,000	1,814,000	654,100	167,000	70,380	48,200

Calendar year 1949: Max 80,000 Min 680 Mean 7,328 Ao-ft 5,304,990
 Water year 1949-50: Max 55,000 Min 760 Mean 7,191 Ao-ft 5,205,510

Note.--No gage-height record Feb. 11 to Apr. 20, May 10-15, May 17 to July 12, Sept. 27-30, discharge, computed on basis of upstream records. Gage heights for period Jan. 20 to Feb. 10 are from graph of station watchman's information and flood-mark.

HELMAND RIVER BASIN

12

Helmand River at Chahar Burjak, Afghanistan

Discharge, in cubic feet per second, water year October 1950 to September 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	880	1,300	1,470	1,420	1,690	3,000	25,000	29,100	24,000	6,000	1,900	1,100
2	900	1,300	1,500	1,420	1,750	3,100	21,000	30,400	24,000	5,600	1,800	1,100
3	900	1,300	1,550	1,420	1,750	3,300	19,000	31,500	23,000	5,400	1,700	1,100
4	920	1,300	1,580	1,440	1,750	3,500	18,000	32,400	22,000	5,200	1,700	1,100
5	920	1,320	1,580	1,440	1,750	3,700	18,000	32,900	21,000	5,000	1,600	1,100
6	920	1,340	1,580	1,470	1,880	4,000	18,000	32,500	20,000	4,800	1,600	1,100
7	940	1,370	1,580	1,470	3,070	4,500	17,000	31,500	19,000	4,600	1,600	1,100
8	960	1,370	1,550	1,500	2,700	5,000	17,000	31,500	18,000	4,400	1,500	1,100
9	960	1,370	1,500	1,500	2,410	5,500	16,000	33,500	17,000	4,300	1,500	1,100
10	1,000	1,340	1,470	1,520	2,550	6,000	15,000	40,000	16,000	4,200	1,500	1,100
11	1,050	1,370	1,470	1,520	4,670	7,000	15,000	50,000	15,000	4,000	1,400	1,100
12	1,050	1,370	1,470	1,520	3,500	9,000	15,000	56,000	14,000	3,800	1,400	1,100
13	1,100	1,370	1,470	1,550	3,000	10,000	17,000	50,000	13,000	3,600	1,300	1,100
14	1,100	1,390	1,500	1,600	2,700	11,000	20,000	45,000	13,000	3,500	1,300	1,100
15	1,100	1,420	1,520	1,650	2,500	10,000	24,000	40,000	12,000	3,300	1,300	1,100
16	1,150	1,390	1,520	1,650	2,400	8,600	26,000	36,000	11,000	3,200	1,250	1,100
17	1,150	1,370	1,550	1,700	2,400	8,000	27,000	37,000	11,000	3,100	1,200	1,100
18	1,150	1,370	1,520	1,700	2,500	8,400	27,000	32,200	10,500	2,900	1,200	1,100
19	1,150	1,370	1,500	1,700	2,400	12,000	27,000	30,400	10,000	2,800	1,200	1,100
20	1,150	1,370	1,470	1,650	2,400	14,000	27,000	29,600	10,000	2,700	1,150	1,100
21	1,180	1,370	1,470	1,640	2,400	13,700	28,000	29,200	9,600	2,600	1,150	1,100
22	1,200	1,370	1,440	1,640	2,500	13,000	29,000	29,100	9,000	2,500	1,150	1,100
23	1,220	1,390	1,440	1,660	2,700	12,200	28,000	29,100	8,600	2,400	1,150	1,100
24	1,240	1,390	1,440	1,660	3,000	11,400	27,000	28,800	8,000	2,400	1,150	1,100
25	1,250	1,420	1,440	1,660	2,700	11,000	27,000	28,400	7,500	2,300	1,150	1,100
26	1,260	1,440	1,440	1,660	2,600	11,500	29,000	27,800	7,200	2,200	1,100	1,100
27	1,260	1,440	1,470	1,640	2,700	12,700	28,200	27,200	7,000	2,200	1,100	1,100
28	1,270	1,470	1,440	1,640	2,800	14,000	27,600	26,600	6,800	2,100	1,100	1,100
29	1,300	1,500	1,440	1,660	-	18,000	27,200	25,800	6,600	2,100	1,100	1,100
30	1,300	1,500	1,440	1,690	-	27,000	28,100	25,200	6,400	2,000	1,100	1,100
31	1,300	-	1,420	1,660	-	29,000	-	24,500	-	1,900	1,100	-
Total	34,230	41,390	46,230	49,050	71,170	313,100	688,100	1,033,200	400,200	107,100	41,450	33,000
Mean	1,104	1,380	1,491	1,582	2,512	10,100	22,940	33,330	13,340	3,455	1,337	1,100
Ac-ft	67,890	82,100	91,700	97,290	141,200	621,000	1,365,000	2,049,000	793,800	212,400	82,210	65,450

Calendar year 1950: Max 55,000 Min 780 Mean 7,219 Ac-ft 5,246,960
 Water year 1950-51: Max 56,000 Min 880 Mean 7,831 Ac-ft 5,669,040

Note.—No gage-height record Oct. 1-31, Jan. 5-24, Feb. 12 to Apr. 26, May 10-17, May 31 to Sept. 30; discharge computed on basis of upstream records at Kajakai dam and Arghandab River near Kala Bist.

HELMAND RIVER BASIN

12

Helmand River at Chahar Burjak, Afghanistan

Discharge, in cubic feet per second, water year October 1951 to September 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								22,000	9,430			
2								22,000	9,100			
3								21,000	8,770			
4								20,000	8,440			
5								21,000	8,020			
6								22,000	7,920			
7								23,000	7,820			
8								22,000	7,620			
9								21,000	7,510			
10								20,000	7,310			
11								19,000	7,220			
12								18,000	7,100			
13								17,000	6,800			
14								16,000	6,200			
15	1,120	1,450	1,660	2,050	4,630	11,400	21,800	15,000	5,700	1,970	962	925
16								14,500	5,400			
17								14,000	5,100			
18								13,500	4,900			
19								13,000	4,700			
20								12,400	4,600			
21								12,000	4,400			
22								11,600	4,300			
23								11,500	4,100			
24								11,200	4,000			
25								10,800	3,900			
26								10,600	3,800			
27								10,500	3,700			
28								10,200	3,500			
29								9,780	3,400			
30								9,660	3,300			
31		-				-		9,660	-			-
Total	1,120	1,450	1,660	2,050	4,630	11,400	21,800	183,900	178,060			
Mean	69,000	86,000	102,000	126,000	257,000	701,000	1,297,000	959,800	353,200	121,000	59,000	55,000
Ac-ft								15,610	5,935	1,970	962	925

Calendar year 1951: Max - Min - Mean Ac-ft 5,684,350
 Water year 1951-52: Max - Min - Mean 5,766 Ac-ft 4,186,000

Note.--No gage-height record Oct. to May 19, June 12 to Sept. 30; discharge for May 1-19, June 12-30 estimated on basis of upstream records; monthly discharge for remainder of year computed on basis of upstream records and discharge ratios for other years.

HELMAND RIVER BASIN

12

Helmand River at Chahar Burjak, Afghanistan

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,000	1,300	1,450	1,600	2,670	3,030	2,970	5,260	5,560	5,180	4,680	4,480
2	1,000	1,350	1,450	1,600	2,620	3,900	3,900	5,040	5,980	5,180	4,740	4,540
3	1,000	1,350	1,450	1,650	2,250	3,960	4,020	5,040	6,060	5,080	4,680	4,540
4	1,000	1,350	1,450	1,650	2,170	3,840	4,140	5,110	5,890	5,080	4,740	4,540
5	1,000	1,350	1,450	1,700	2,120	3,590	4,080	5,180	6,140	5,080	4,610	4,410
6	1,000	1,350	1,450	1,700	2,120	3,530	4,080	5,110	5,810	4,140	4,580	4,340
7	1,000	1,350	1,450	1,700	2,120	3,530	4,210	5,180	5,730	2,970	4,610	4,410
8	1,000	1,350	1,450	1,700	2,120	3,530	4,210	5,180	5,640	2,620	4,610	4,410
9	1,050	1,350	1,500	1,700	2,170	3,530	4,410	5,260	5,640	2,870	4,540	4,480
10	1,050	1,350	1,500	1,650	2,300	3,420	4,210	5,110	5,730	4,480	4,580	4,540
11	1,050	1,350	1,500	1,650	2,340	3,530	4,270	5,110	5,730	4,740	4,680	4,610
12	1,050	1,350	1,500	1,600	2,470	3,770	4,210	5,180	5,730	4,810	4,710	4,440
13	1,100	1,350	1,500	1,600	4,530	3,840	4,410	5,260	5,640	4,810	4,610	4,340
14	1,100	1,350	1,500	1,800	9,500	9,770	4,740	5,110	5,640	4,740	4,610	4,340
15	1,100	1,350	1,500	1,600	7,210	3,710	4,5320	5,180	5,640	4,880	4,680	4,340
16	1,100	1,350	1,500	1,700	46,800	3,710	7,410	5,260	5,560	4,880	4,610	4,340
17	1,100	1,350	1,500	1,900	47,600	3,710	5,980	5,260	5,520	4,810	4,540	4,410
18	1,100	1,350	1,500	2,200	40,000	3,710	5,560	5,260	5,610	4,920	4,610	4,020
19	1,100	1,350	1,550	2,400	48,000	3,710	5,410	5,180	5,340	5,000	4,480	3,250
20	1,100	1,400	1,500	2,450	46,500	3,770	5,340	5,180	5,340	4,880	4,610	2,940
21	1,100	1,400	1,500	2,470	45,500	3,770	5,260	5,180	5,180	4,810	4,740	2,820
22	1,100	1,400	1,600	2,470	44,800	3,770	5,260	5,260	5,180	4,810	4,680	2,820
23	1,100	1,400	1,600	2,470	44,300	3,770	5,260	5,260	5,180	4,740	4,640	2,870
24	1,100	1,400	1,600	2,470	43,900	3,710	5,340	5,340	5,340	4,680	4,640	2,820
25	1,100	1,400	1,600	2,470	43,700	3,710	5,340	5,410	5,480	4,740	4,680	2,770
26	1,150	1,400	1,600	2,520	43,500	3,710	5,180	5,560	5,410	4,740	4,680	2,720
27	1,200	1,400	1,600	2,520	43,300	3,770	5,180	5,480	5,180	4,740	4,610	2,770
28	1,200	1,400	1,600	2,470	43,140	3,530	5,260	5,480	5,040	4,810	4,810	2,820
29	1,200	1,450	1,600	2,470	-	2,670	5,180	5,410	5,000	4,680	4,740	2,820
30	1,250	1,450	1,600	2,520	-	2,300	5,110	5,480	5,040	4,610	4,740	2,720
31	1,300	-	1,600	2,570	-	2,080	-	5,560	-	4,610	4,610	-
Total	33,800	41,100	47,250	62,770	119,550	109,880	144,250	162,870	165,760	143,210	144,080	113,640
Mean	1,090	1,370	1,524	2,025	4,270	3,545	4,808	5,254	5,525	4,620	4,618	3,788
Ac-ft	67,040	81,520	93,720	124,500	237,100	217,900	266,100	323,000	328,800	284,100	285,800	225,400

Calendar year 1952 : Max - Min - Mean - Ac-ft 4,171,280
 Water year 1952-53: Max 10,000 Min 1,000 Mean 3,529 Ac-ft 2,554,980

a No gage-height record; discharge computed on basis of records for below Kajakaj Reservoir Arghandab R. near Kala Bist. No gage-height record Oct. 1 to Jan. 20; computed as above.

HELMAND RIVER BASIN

12

Helmand River at Chahar Burjak, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,670	2,740	2,800	773			25,000	33,000	15,000	7,000	3,100	3,400
2	2,670	2,700	2,800	756			33,000	32,000	15,000	5,000	3,040	3,400
3	2,380	2,670	2,800	756			32,000	32,000	15,000	2,500	3,100	3,400
4	2,080	2,640	2,800	823			27,000	32,000	14,500	1,500	3,100	3,250
5	1,840	2,620	2,800	815			23,000	32,000	14,000	1,200	3,180	3,250
6	1,690	2,600	2,800	764			20,000	32,000	13,500	1,100	3,180	3,100
7	2,200	2,570	2,800	881			18,000	32,000	13,000	1,080	3,180	3,040
8	2,520	2,600	1,600	1,290			17,000	32,000	13,000	2,000	3,180	2,980
9	2,570	2,600	1,110	1,340			16,000	32,000	12,500	3,550	3,040	2,980
10	2,620	2,600	839	1,400			15,000	32,000	12,500	3,480	2,980	2,980
11	2,620	2,600	740	1,470			15,000	32,000	12,000	3,100	2,920	2,860
12	2,570	2,600	1,380	3,670			14,000	31,000	12,000	2,920	2,980	2,740
13	2,520	2,620	2,040	4,680			14,000	30,000	11,500	2,800	2,980	2,770
14	2,520	2,620	2,140	4,680			13,000	29,000	11,000	2,800	2,980	2,770
15	2,540	2,540	2,190	4,680	18,910	12,200	13,000	29,000	11,000	2,980	3,040	2,770
16	2,540	d1,250	2,230	4,680			13,000	27,000	10,500	2,980	3,040	2,770
17	2,540	d820	2,300	4,680			13,000	25,000	10,500	2,980	3,100	2,770
18	2,600	d820	2,300	4,680			13,000	23,000	9,500	2,980	3,100	2,830
19	2,600	d1,200	2,300	4,610			13,000	22,000	9,000	3,040	3,040	2,890
20	2,600	d2,000	2,300	4,680			13,000	21,000	8,500	3,040	3,040	2,830
21	2,570	2,210	2,300	4,680			12,500	20,500	8,500	2,800	2,980	2,830
22	2,570	2,520	2,340	4,740			13,300	20,000	8,500	2,680	3,040	2,800
23	2,600	2,570	2,340	4,960			16,100	19,500	8,200	2,620	3,320	2,770
24	2,600	2,570	2,340	5,340			19,700	19,000	8,100	2,620	3,320	2,740
25	2,600	2,600	2,340	5,680			24,000	18,500	7,900	2,620	3,320	2,680
26	2,600	2,600	2,340	5,890			27,400	18,000	7,800	2,740	3,320	2,590
27	2,670	2,800	2,340	5,770			31,200	17,000	7,700	2,800	3,320	2,710
28	2,700	2,800	1,730	5,680			33,300	16,500	7,700	2,740	3,320	2,770
29	2,700	2,800	1,210	5,640	-		34,100	16,000	7,700	2,620	3,180	2,770
30	2,670	2,800	966	5,170	-		34,000	16,000	7,600	2,680	3,360	2,620
31	2,670	-	839	5,000	-		-	15,500	-	3,100	3,400	-
Total	77,840	71,680	64,144	110,658			605,600	786,500	322,700	88,050	97,180	87,050
Mean	2,510	2,389	2,069	3,569	18,910	12,200	20,190	25,370	10,760	2,840	3,135	2,902
Ac-ft	151,400	142,200	127,200	23,500	1,050,000	750,000	1,201,000	1,560,000	610,000	174,600	192,800	172,700

Calendar year 1953: Max 10,000 Min 740 Mean 3,780 Ac-ft 2,736,500
 Water year 1953-54: Max - Min 740 Mean - Ac-ft 6,384,400

Note.—No gage-height record Nov. 25 to Dec. 9, Feb. 1 to April. 20, Apr. 30 to July 6; discharge estimated from study of discharge records for Helmand River below Kajakai dam, Arghandab River near Kala Bist, and temporary station on Helmand R. at Chahar Burjak.

d Doubtful gage-height record; discharge estimated from study of discharge records for Helmand River below Kajakai Reservoir.

HELMAND RIVER BASIN

Khash River near Dilaram, Afghanistan

14

Location.--Lat. $32^{\circ}10'$ N., long. $63^{\circ}22'$ E., on left bank about 3 kilometers downstream from Dilaram and about 190 kilometers upstream from Chakansur.

Drainage area.--2,080 square miles, approximately.

Records available.--October 1952 to September 1954.

Gage.--Water-stage recorder. Altitude of gage is 810 meters, approximately, from Survey of India maps.

Extremes.--1952-53: Maximum discharge during year, 26,700 cfs Feb. 14 (gage-height, 2.52 meters) from rating curve extended above 2,110 cfs on basis of slope-area determination of peak flow at 2.97 meters in 1955; no flow for many days.

1953-54: Maximum discharge, 9,380 cfs Feb. 13 (gage height, 1.83 meters, from flood-mark), from rating curve extended above 2,110 cfs on basis of slope-area determination of peak flow in 1955; no flow for many days.

Remarks.--Records fair except those for periods of doubtful or no gage-height record, which are poor. Many small diversions for irrigation above the station.

HELMAND RIVER BASIN

Khask River near Dilaram, Afghanistan

14

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	1	4	49	a360	318	318	200	4		
2	0	0	1	3	43	a350	318	295	295	4		
3	0	0	2	3	49	a350	295	286	635	3		
4	0	0	2	3	49	a340	295	266	560	2		
5	0	0	2	3	49	a340	295	257	522	2		
6	0	0	2	3	31	a500	276	248	448	2		
7	0	0	2	3	43	780	276	238	341	1		
8	0	0	2	1	49	1,360	276	238	276	1		
9	0	0	2	2	247	1,070	276	200	219	1		
10	0	0	2	3	2,700	870	257	194	174	2		
11	0	0	2	1	1,410	780	257	187	148	3		
12	0	0	1	1	238	690	8,080	180	126	4		
13	0	0	3	128	3,030	635	1,260	174	112	4		
14	0	0	2	48	8,460	610	1,100	161	99	5		
15	0	0	2	31	1,280	560	900	148	86	5		
16	0	0	3	13	870	560	795	118	76	7		
17	0	0	2	13	690	535	720	135	62	4		
18	0	0	2	13	610	510	635	135	64	4		
19	0	0	2	21	560	460	585	135	55	2		
20	0	0	2	25	510	435	560	126	49	0		
21	0	0	3	31	460	410	510	117	43	0		
22	0	0	3	31	435	410	485	112	37	0		
23	0	0	3	31	410	387	485	104	31	0		
24	0	0	3	37	410	387	435	99	24	0		
25	1	0	3	43	400	410	435	99	21	0		
26	1	2	37	a390	435	410	94	24	0			
27	2	2	37	a380	410	376	117	19	0			
28	2	3	43	a370	387	364	218	21	0			
29	2	3	43	-	364	341	219	13	0			
30	2	3	43	-	341	318	218	5	0			
31	-	3	49	-	341	-	200	-	0			
Total	0	10	70	747	24,622	16,377	21,933	5,726	4,785	60	0	0
Mean	0	.333	2.26	24.1	865	528	731	185	154	194	0	0
Ac-ft	0	20	138	1,480	48,840	32,480	43,500	11,360	9,490	119	0	0

Calendar year 1952: Max - Min - Mean - Ac-ft
 Water year 1952-53: Max 8,460 Min 0 Mean 204 Ac-ft 146,600

a No gage-height record; discharge interpolated.

HELMAND RIVER BASIN

11

Khask River near Dilaran, Afghanistan

Discharge, in cubic feet per second, water year October 1953 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0			9	50	400	2,000	1,320	295	90		
2	0			9	40	400	3,000	1,250	276	83		
3	0			9	49	380	4,000	1,180	257	83		
4	0			104	69	360	6,000	1,100	238	76		
5	0			3,910	50	360	7,000	1,070	219	76		
6	0			1,540	40	350	5,000	1,030	200	69		
7	0			764	35	350	6,000	960	187	69		
8	0			161	50	350	5,000	900	187	62		
9	0			83	d274	350	4,000	900	174	55		
10	0			69	d7,260	600	3,000	930	161	55		
11	0			62	d6,820	500	2,400	870	148	49		
12	0		1	69	d5,680	450	2,200	840	135	49		
13	0		1	55	d3,850	450	2,100	810	126	43		
14	0		2	50	d6,320	450	2,100	750	126	43		
15	0	1	2	50	d3,310	500	2,100	720	126	43		2
16	0		3	45	3,500	600	2,100	690	117	43		
17	0		4	40	2,000	700	2,050	660	108	43		
18	0		4	40	1,500	600	2,050	610	135	43		
19	0		5	40	1,000	600	2,050	585	148	43		
20	0		4	35	800	700	2,000	560	148	37		
21	0		4	35	700	1,000	1,950	510	135	31		
22	0		5	30	600	1,500	1,900	510	148	37		
23	0		7	30	550	2,500	1,850	485	148	37		
24	0		7	30	500	3,000	1,800	460	135	37		
25	0		5	25	500	2,720	1,750	435	126	31		
26	0		5	25	450	2,300	1,660	410	117	25		
27	0		5	25	450	2,500	1,580	387	108	17		
28	1		5	40	400	2,300	1,540	387	99	17		
29	1		5	1,830	-	2,000	1,450	364	99	13		
30	1		7	396	-	1,500	1,360	311	90	12		
31	1	-	11	69	-	1,200	-	318	-	12	2	-
Total	4	30	114	9,670	45,877	31,970	82,990	22,342	4,716	1,423	167	60
Mean	0.1	1.0	3.7	312	1,638	1,031	2,766	721	157	45.9	5.4	2
Ac-ft	8	60	226	19,180	91,000	63,410	261,600	44,310	9,350	2,820	331	119

Calendar year 1953: Max 8,460 Min 0 Mean 204 Ac-ft 147,560
 Water year 1953-54: Max 7,260 Min 0 Mean 546 Ac-ft 395,470

d Discharge computed from doubtful gage-height record.

Note.-- No gage-height record Oct. 31 to Dec. 11, Jan. 11-28, Feb. 1, 2, 6-9, 18 to Apr. 13, July 30 to Sept. 30, discharge estimated on basis of recession curves, and comparison with records for Musa Qula River, Helmand River and Arghandab River.

FARAH RIVER BASIN

15

Farah River near Farah, Afghanistan

Location.--Lat. $32^{\circ} 20'$ N., long. $62^{\circ} 00'$ E., on right bank, about 150 meters upstream from bridge on Farah to Herat road, 8 kilometers southwest of town of Farah, and about 130 kilometers upstream from (Hamun-i-Sabari and Hamun-i-Pasak) in the Chakansur-Seistan basin.

Drainage area.--10,400 square miles, approximately, from Survey of India base maps.

Records available.--April to September 1953: extremes only for 1954.

Gage.--Staff gage read once or twice daily. Altitude of gage is about 760 meters.

Extremes.--April to September 1953: Maximum discharge during period, 127,000 cfs Apr. 11 (gage height, 5.75 meters, from floodmark), from rating curve extended above 10,400 cfs on basis of slope-area determination at gage height 5.85 meters (flood of Mar. 18, 1955); minimum daily, 2 cfs, or less, on many days.

1953-54: Maximum discharge, 68,000 cfs about Feb. 12 (gage height, 5.35 meters, from floodmark) from slope-area determination; minimum daily about 2 cfs on many days.

Remarks.--Records poor. Many diversions for irrigation above the station. Bridge approach fill washed out in April 1953 and February 1954 which affected high water stage-discharge relation by varying amounts.

Farah River near Farah, Afghanistan

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Discharge, in cubic feet per second, for period April 1953 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							1,020	630	446			
2							1,080	12,000	446			
3							1,050	4,600	446			
4							993	2,680	425			
5							1,000	993	2,000	400		
6							993	1,730	350			
7							966	1,420	300			
8							858	41,100	250			
9							1,500	4850	200			
10							2,680	654	750	160		
11							67,600	460	750	120		
12							41,700	4560	726	100		
13							28,800	4530	702	70		
14							18,700	509	678	50		
15							13,000	488	678	40	2	2
16							9,500	425	581	30		
17							6,800	384	581	20		
18							5,400	363	581	10		
19							4,160	342	557	2		
20							3,180	300	557			
21							2,480	265	557			
22							2,230	230	557			
23							2,050	199	557			
24							1,910	199	509	2		
25							1,730	199	509			
26							1,570	199	509			
27							1,500	199	488			
28							1,340	804	488			
29							1,280	1,920	467			
30							1,120	885	467			
31							-	726	-			
Total							233,230	18,783	37,903	3,889	62	60
Mean							7,774	608	1,263	125	2	2
Ac-ft							462,600	37,260	75,180	7,710	123	119

Calendar year 1953:

Max

Water year 1952-53:

Max 67,600

Note.--No gage-height record Apr. 1-9, July 5-18, July 20 to Sept. 30; discharge estimated on basis of records for Khash River, information from gage reader, and known low-water conditions.

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